The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 28. JULY 9, 1938. Vol. 50.

Some Recent Advances in Veterinary Physiology and Their Clinical Application*

W. P. BLOUNT, F.R.C.V.S.,

Chief Veterinary Officer, East Sussex County Council

I have accepted with real pleasure your kind invitation to present a paper dealing with some functions of the animal body, not because I pretend to be a physiologist, but because it is a particularly fascinating subject, and one which I know you will appreciate also from a clinical aspect.

The title suggests that one has had an opportunity of reading most of the physiological journals regularly—this, however, is unfortunately untrue, but instead I can claim to have followed some of the advances which have taken place during the past ten years, that is, since qualifying in Edinburgh, where I had the good fortune to work in the laboratory of Dr. Dryerre as a very junior assistant. It may be thought by some that the paper delves into the realms of surgery, therapeutics or pathology, but if that is so, it will only show how comprehensive the subject really is, and how impossible it is to keep either it, or them, in a water-tight compartment when dealing with clinical veterinary practice.

Unfortunately, I did not have an opportunity to attend the paper given by one of your members, Mr. Scorgie, on "Present-day knowledge concerning Vitamins" so that I hope a part of this paper will not be duplicating anything said by that gentleman.

Finally, may I apologise for the somewhat wandering arrangement of the subject matter, but I thought it would appeal more than had I dealt in full with but one small aspect of veterinary physiology.

The Vegetative Nervous System

The effects of stimulation of the sympathetics or vagus nerves in an animal body are well known to veterinarians, and it is of interest to note that it is now believed that a substance, acetyl-choline, is actually liberated at the nerve endings when the parasympathetics are stimulated; similarly adrenaline or a closely allied substance sometimes termed "sympathin" results from stimulation of the sympathetic nerves.

Acetyl-choline is of enormous physiological importance, and is active even when diluted 1: 10,000,000 (Holmes, 1937). Although it is presumably liberated at all parasympathetic nerve endings following stimulation, its greatest effect appears to be on the digestive tract, and it may thus form a valuable aid in the treatment of impaction of the rumen and omasum, and also in certain types of colic (mid-colon impaction) in the horse. Harvey (1934) has communicated a preliminary report in the *Veterinary Record re* colic, and it will be of interest to hear members' views and experiences on its effects clinically. Apparently, the duration of action of this natural drug is limited by a widely distributed ferment—an esterase which rapidly destroys it (by hydrolysis to choline and acetic acid), but it has been shown that eserine inhibits this ferment and thus allows acetyl-choline to act longer than normal, hence the rational use of eserine as a parasympathetic stimulant. Pilocarpine and arecoline have no such action on choline esterase but probably act direct on the motor receptor substances, thus replacing acetyl-choline.

The spleen is believed to hold large stores of acetyl-choline, some of which will be liberated following its contraction during excitement (sympathetic stimulation) which probably accounts for the diarrhoea well known at such times! Its semi-specificity for the intestines is thus shown, for of course associated typical sympathetic effects occur concomitantly, *i.e.*, dilatation of the pupil, tachycardia, etc. Biochemical examinations show that lowered blood esterase values occur in tuberculosis, but figures are not available to show whether these follow or predispose to the infection. For clinical purposes, mecholin has been recommended in preference to pure acetyl-choline; it is a derivative of the latter and is acetyl-beta-methyl-choline.

*Paper presented to the Central Division, N.V.M.A., at 36, Gordon Square, W.C.1, on May 5th, 1938.

Adrenaline has long served as a vaso-constrictor in medical practice, but it is very unstable, readily oxidised and cannot be given by the mouth. However, ephedrine, a Chinese plant alkaloid, has a similar (though less potent) action, is stable by the mouth and therefore valuable to the veterinarian. If a volatile constrictor of the capillaries is required benzyl-methyl-carbinamine may be used —it is incorporated in certain proprietary "inhalers" and is stated to have greater potency than ephedrine. It should be noted that adrenaline does not act on damaged (inflamed) blood vessels—arterioles.

Although it has been known for many years that the adrenal cortex is essential for life, our knowledge concerning its functions has been extremely limited. It destruction, either artificially (bi-laterally) or as occurs in Addison's disease, always ends in death, and adrenaline—the secretion of the medulla—is valueless as an antidote. Research has shown that extracts of the cortex are useful in alleviating the sufferings of Addison's disease, and injections prolong the life of cats indefinitely, following removal of the glands, but the quantities obtainable from ox glands are extremely small and therefore practical application is still very limited. Loeb has suggested that the cortex regulates the metabolism of sodium, rather after the fashion of the parathyroid glands and calcium mobilisation. Curiously enough, the startling discovery has been made that vitamin C is stored in relatively large quantities in the adrenal cortex. Vitamin C, ascorbic, or as it was formerly called hexuronic acid is carbohydrate in nature, and a powerful reducing agent. Apart from its action as part of one of the oxidising systems in both plants and animals, vitamin C appears necessary for the maturation of normoblasts where it is of course closely associated with iron and copper—hence the anaemia accompanying scurvy. Incidentally, Markowitz (1937) declares that dogs should always receive an adequate supply of ascorbic acid in their diet (by the addition of orange or tomato juice twice weekly) for the prevention of canine scurvy, which manifests itself by soreness of the tongue and mouth.

Perhaps one of the most striking pieces of work recently published with reference to accessory food factors concerns nicotinic acid and its relationship to metabolism in pigs. Chick, Macrae, Martin and Martin (1938) have shown that this substance cures the lesions produced by a pellagra-producing diet in pigs consisting chiefly of maize. Affected pigs showed emaciation, diarrhoea, poor appetite and dermatitis, but recovered fully after several weeks treatment of nicotinic acid alone—60 mg. daily in food.* This acid has also been shown to be valuable in the treatment of true pellagra, and a cure for black tongue of dogs caused by vitamin B deficiency. The biological significance of nicotinic acid is uncertain, but although it has no anti-neuritic properties, it definitely appears to be the precursor of the P.P. principle in the vitamin B complex, for it abolishes the increased porphyrinuria associated with pellagra, and its amide appears to act as a special co-partner to the flavine nucleus of the Warburg's yellow pigment (Bacharach, 1938).

Another now well known chemical substance which exerts fundamental effects on the animal body is the base *choline*. It has been found that diets which normally produce advanced fatty deposits in the liver, do not do so if choline is given. Further, Markowitz showed that following total pancreatectomy in dogs, although dogs survived for about nine months with insulin treatment, they then died—*post-mortem* examinations always revealing advanced fatty livers. This could be prevented by the feeding of raw pancreas or lecithin, and finally he proved that the principle concerned in this prolongation of life was choline. Apparently during pancreatic digestion choline is liberated normally, but in its absence hepatic insufficiency and death result. Choline may therefore prove of great clinical interest in the prevention and treatment of fatty livers in animals, *e.g.*, as in pregnancy, eclampsia, milk fever, etc. There is some evidence to show that vitamin B_1 exerts an action which is antagonistic to choline. Poultry frequently suffer from advanced fatty degeneration of the liver associated with heavy grain feeding (wheat and maize) and as the modern diet of layers frequently contains a rather extensive quantity of vitamin B, we may in the near future add to the mineral mixture a choline preparation.

To return to the endocrine system, it is of interest to note that the extract of the parathyroid glands which mobilises calcium from the spongy skeleton will also leech out any lead which it will be remembered is stored in bone, following ingestion. Similarly, acidosis is followed by decalcification, and therefore if lead is present in the bones, poisoning may follow such acidosis.

The ability of the thyroid gland to remove iodine from the blood is truly remarkable, for it has been shown that in the dog there is a rise of several hundreds per cent. of this commodity in the gland within five minutes. The thyroid vesicle is capable of great distension,

*Photographs were shown, illustrative of the improvement effected in the condition of affected pigs by the addition of nicotinic acid to the diet.

so that it may be considered a normal retention cyst adapted for iodine storage (Hadfield and Garrod, 1934). Simple enlargements of the thyroid glands, presumably associated with iodine deficiency—endemic goitre—are not uncommon in hunters. There seems to be a difference of opinion as to whether these should be considered unsoundnesses, for although clinically such animals appear quite normal for many years, sudden death may then take place. In poultry, it is always wise to examine the state of these glands (together with the parathyroids) whenever *post-mortem* examinations are carried out, at the same time remembering that heavy egg production adversely affects them. It is rather a pity no simple test exists for the detection of altered basal metabolic rate, such as occurs with thyroid disorders.

In addition to vasopressin and oxytocin, a third hormone of the posterior pituitary gland is known, anti-diuretic in function. Water is treated by the animal mechanism as a poison, being excreted as rapidly as possible unless electrolytes are present. The function of this hormone, therefore, is to aid the retention of water so that the kidneys can secrete concentrated urine. Its action is direct on the kidney parenchyma, being effective following section of the nerves, and appears even more intense under the co-operative influence of thyroxine. (Klisiecki and others, 1933.)

It has been suggested that epilepsy and eclampsia may be associated with over-activity of this portion of the pituitary with subsequent water retention and auto-intoxication. To correct this water balance diuretics are indicated and the intake of fluids should, of course, be restricted. In some instances, a ketogenic diet (bacon, butter, cream, eggs, pork, as opposed to beans, bananas, white bread, cocoa, flour oatmeal, peas, potatoes, or rice) has been beneficial in the treatment of epileptics. It can be seen that there may be an important relationship also to the metabolism of sodium chloride and therefore to the adrenal cortex. One wonders whether the above bear any relationship to hysteria or eclampsia in the bitch?

Although the posterior pituitary functions were recognised first, the facts bearing on the anterior portion are now more numerous, and at least seven or eight functions can be ascribed to the latter with reference to the thyroid, parathyroid, adrenals, sex glands, glycaemia, fat metabolism and milk production. Clearly these in themselves would provide material for an interesting paper on clinical physiology, but perhaps it should be mentioned that *prolactin*, which on injection causes the mammary glands to function—even in the male animal—is also capable of stimulating the crop glands of pigeons. Perhaps this explains why the secretion of the proventriculus in hens contains a rennin-like ferment which coagulates milk! Pigeon milk contains no sugar or other carbohydrate, but its 13 per cent. of proteins and eight per cent. of fat ensure that the body weight of the squab doubles itself with 48 hours (Dabrowska, 1932). Prolactin also induces splanchnomegaly in pigeons; perhaps therefore it is a deficiency in anterior pituitary secretion which accounts for the many cases of mal- and under-development of the viscera in modern pullets?

Concerning sex hormones, it is interesting to note that the development of the nipples (teats) of pregnant mice can be entirely prevented by the injection of testicular hormone (testosterone) so that suckling is impossible. This interesting result may have practical applications in certain species, and incidentally, it should be easy to prove whether cryptorchid dogs or boars (with their automatic deficiency in hormone) show unusually large false nipples.

Finally, may I mention briefly the relationship between the female sex hormone and cancer. It has been found that the ovarian hormone oestrone (oestrin) increases the susceptibility of the skin to the local carcinogenic action of tar—a brown degeneration of the adrenal glands occurs; this same type of degeneration is a marked feature in certain mice with spontaneous cancer of the breast, so that there appears to be a distinct relationship between malignancy of the breast and brown degeneration of the adrenals (W. E. Gye, 1937). Curiously enough, one of the most active carcinogenic hydrocarbons, 1:2 benzpyrene, is oestrogenic in effect (Holmes, 1937), as is also 5:6 cyclopentine.

The Liver

Large though it is, the average practitioner seldom realises the essential importance of, and multifarous duties performed by, the liver. Its excretion of bile is known to the layman, but even this apparently simple function has been found to differ from our usual conception of its formation.

It will be recalled that bile consists of both salts and pigments, and contrary to early teachings, the latter are mainly formed from disintegrating red blood corpuscles in sites other than the liver. The main pigments of bile are bilirubin and biliverdin, and although these are now believed to be formed in any portion of the reticulo-endothelial system, in the dog at least, the bone marrow proves to be their most active factory. No doubt the Kupffer liver cells also manufacture bilirubin from haematin, but the main function of the liver relative to bile pigments is that of ex-

cretion into the intestines. Here by bacterial action the bilirubin or its oxidation product biliverdin (absent in dogs but present in the bile of herbivora) is finally converted into urobilin, a good deal of which is absorbed back into the blood stream later to be excreted in the urine.

One specially interesting feature of the liver is its ability to regenerate following surgical removal of a portion. This is probably associated with the massive blood supply, the hepatic and portal vessels, which, of course, remains large even though portions of the liver itself are excised. This power of complete regeneration is also shared by the stomach (dog) omasum and omentum (calf) and mandible (fowl). In many species of birds, however, no such liver regeneration can take place, because a natural Eck's fistula occurs and there is therefore no such adequate blood supply available for hyperplasia. The ability of the liver to excrete bile pigments is such that when only 1/10th of the organ remains (following almost complete hepatectomy) they do not accumulate in the bloodstream to cause jaundice. No doubt this is one reason why jaundice is so rare in blackhead in turkeys, where one frequently finds the major part of the organ degenerate and incapable of normal functioning.

In starvation, the bile is collected into the gall-bladder which shows massive distension—a fact which may be of medico-legal importance—whereas in coryza and distemper the flow of bile may be very scanty. In such cases fat tolerance is lowered and it is advisable to feed skimmed milk, lean meat and no butter. The musculature of the gall-bladder responds to parasympathetic stimulation but if inflamed the contractile power is greatly impaired. Normally, of course, a fatty meal is almost specific in rapidly emptying the gall-bladder, and the best and only satisfactory direct cholagogue is cholic acid or bile salts themselves.

Following the brilliant work of Mann, Bollmann and Markowitz in experimental surgery as applied to physiology, the operation of total removal of the liver in dogs can be accomplished with safety. Incidentally, the description of such an animal compares favourably in many respects with that of a cow suffering from milk fever, and from this and other considerations there seems little doubt that in time we shall find an hepatic factor in the aetiology of milk fever as important as that of hypocalcaemia. Thus "the animal is not nearly so alert, it prefers to lie down. Twitching of various muscles soon appears. This in turn is followed by coma, generalised convulsions and death . . . . the convulsions were found to be associated with hypoglycaemia." Incidentally, Thomas (1933) of Australia has rather disturbed the accepted view that calcium in the blood is restricted to the plasma, for he finds in the ox 6 mg./100 c.c. corpuscles—none in man and pigs, of course.

In confirmation of the capacity of the liver for work it is stated that even following the removal of 80 per cent of a dog's liver, the fasting blood sugar is normal.

Markowitz (1937) made the astonishing discovery that a rise in the uric acid content of the blood is usually the first clinical sign of disturbed hepatic function, and there is good reason to suppose therefore that this biochemical examination will supersede many now in use for the detection of liver failure. It is sufficiently delicate to detect the diminished liver function which accompanies the feeding of a diet rich in fat which presumably overloads the liver cells mechanically. However, reference must also be made to the Van den Bergh test. In jaundice, there are three main types of blood pigment: (1) that due to excessive production, (2) that which returns to the blood stream following partial or complete stoppage of the excretory bile ducts leading to the intestines, and finally (3) that due to imperfect excretion by damaged (diseased) liver cells. There is therefore jaundice of haemolytic or hepatic origin, and the Van den Bergh diazo reaction assists in differentiating these. Of course, in obstructive jaundice, bile salts will accumulate in the blood as well as pigments, and the faeces will be of abnormal pigmentation.

The value of this test as an aid to the diagnosis of jaundice in animals is however somewhat limited, for Heimann (1933) has shown that bilirubin is not present in the serum of rabbits and guinea-pigs, and Green (1934) states that it is absent from the blood of cattle and sheep. Further, about six to eight c.c. of blood are required, and this cannot usually be obtained from dogs or cats by single-handed practitioners.

In spirochaetal jaundice of dogs, there is extensive necrosis of the liver, and as a result there is every reason to believe that the Van den Bergh test would be bi-phasic, whereas in obstructive jaundice it is direct and in haemolytic jaundice it is termed indirect. Details of these tests can be obtained from any text-book on laboratory methods, *e.g.*, Beaumont and Dodds (1925).

Markowitz and his colleagues have shown that ascites, which for years was believed to be due in a number of cases, to back pressure as in hepatic cirrhosis, does not occur following ligation of the portal vein. Rather than representing a sign of portal stasis, Markowitz believes that it is an event of failing liver function. Bollman (1928) was able to produce massive ascites in dogs overnight by the feeding of meat or meat extractives (such as occur in

certain proprietary preparations) following operative procedure for the production of experimental obstructive jaundice. It is recommended therefore that all dogs affected by even mild disease of the liver should receive no meat, but instead milk, biscuits and Karo—corn syrup rich in glucose. As an additional aid to the dispersal of ascites, mercurial or saccharose diuretics are favoured.

Rumination

During the past 15 years knowledge concerning the physiology of rumination has been consolidated. Closure of the glottis during an inspiratory movement causes a marked negative intra-thoracic pressure with suction into the oesophagus, so that ingesta in the adjacent (cardiac) portion of the rumen passes by reverse peristalsis upwards to the gullet and mouth. The rumen does not contract during rumination, but an accompanying contraction of the abdominal muscles may or may not take place. However, if even unilateral pneumothorax is present, regurgitation appears quite impossible [Krzywanek, F. W. (1933)]. Similarly, the practice of "tubing" a cow to prevent straining (with eversion of the uterus) also prevents rumination (because of the interference with the negative pressure in the oesophagus associated with the closed glottis—Dukes (1937), and must therefore be condemned.

Trautmann (1932) noted hypertrophy of the rumen with greatly increased motor activity in an eight-months-old goat, which never ruminated owing to surgical interference with the reticulum shortly after birth. The natural stimulus to rumination is the presence of coarse fibrous bulky food (grass, hay) in the rumen, but regurgitation will not occur unless a reflex arc involving the second stomach appears intact.

Trautmann (1933) has also shown that the rumen is capable of the absorption of water and substances in solution, *e.g.*, glucose. The efforts of many to induce closure of the oesophageal groove to facilitate the passage of drugs direct to the abomasum seem therefore to have been wasted, especially since absorption from the fourth stomach appears to be slower than that from either of the first two "stomachs." The reflex capable of operating the groove is most marked in the calf, but may be stimulated artificially in adult cattle or sheep by means of copper sulphate, and certain other solutions.

The rumen in adult cattle contains millions of symbiotic infusoria which Mangold (1933) has shown may assist digestion by breaking up cellulose. They, however, quickly die out during starvation (five days) and are also absent from the stomachs of young ruminants when fed on a milk diet. These flagellates of the rumen may bear a relationship to the organisms responsible for trichomoniasis and its associated sterility in cattle.

I had hoped to finish with a brief reference to one or two metabolic diseases such as azoturia, visceral gout, etc., but as time is fast getting on, may I mention the question of perspiration.

Kuno has recently published a book entitled "The Physiology of Human Perspiration," the reading of which may perhaps have stimulated the makers of a well-known toilet soap to start their campaign against body odours! Briefly, we have three great groups of skin glands (1) the holocrine (sebaceous), the cells of which are actually cast off to form part of the secretion; (2) the eccrine, typical watery sweat glands distributed over the whole body surface and whose secretion occurs without loss of cellular structure, and (3) the apocrine glands (mammary, axillary sweat glands) where the cells break off at the top but regenerate.

The distribution of eccrine glands is severely restricted in animals (even the horse has none) though they are found on the pad of the cat's foot. The apocrine glands in man usually have an odour of sexual significance.

There are some 2,000,000 eccrine sweat glands in man, and although supplied with sympathetic nerves they respond pharmacologically to parasympathetic drugs such as pilocarpine. Although pilocarpine is effective in the horse and calf it is ineffective in the sheep, which however respond to adrenaline; cats respond to both drugs.

Mental sweating which occurs on the palms, soles and axilla must be clearly distinguished from sensory sweating by thermal agents which effects are over the general body surface.

In man, active sweat centres are present in the sub-thalamic region. General sweating occurs before a rise in body temperature—therefore this is a preventive reflex, its function being the elimination of heat by evaporation; hence its universal appearance. It usually stops before the body temperature falls.

In many mammals, body temperature is controlled through respiration, where sweat glands are deficient, and through the mouth and tongue mucosae. Elephants do not sweat but splash water over their backs with their trunks. In forest zones, which are the natural habitat of elephants, the air is saturated with moisture and sweating could not take place. Thermal sweating is of gradual onset and does not involve the palm and sole. It is said that babies sweat on the upper side when suckling—a "hemi-hydrosis reflex.

The characteristic flexibility of the palm and sole is, in part, maintained by moisture due to the perpetual secretion of associated sweat glands, which counteract the insensible perspiration. Chapped hands are associated with such dryness. The sense of touch is more acute if the figures are moistened, hence a characteristic sweating on the palms and soles, and of course, of spitting or moistening the palms to increase the friction between them and the object to be held. Similarly, with cats' paws during excitement.

Mental sweating is of sudden onset and associated with a separate sweat centre.

Insensible perspiration occurs due to the evaporation of tissue fluid through the dermis. This cutaneous perspiration occurs in a complete absence of sweat glands, as in congenital anhydrosis.

Both eccrine and apocrine glands are present in the axilla, but the latter are inactive in childhood, before the sexual organs function normally.

It is well-known that sweat containing about 99 per cent. of water excretes from the body salt and urea, but it has also been proved that large quantities of lactic acid can also be excreted during exercise. If this does not occur, albuminuria may result. The quantities of acid exuded have been measured, using the training vests of football players.

. . . . .

References

Bacharach, A. L. (1938.) Private communication.

Beaumont, G. E., and Dodds, E. C. (1925.) Recent Advances in Medicine. p. 155. Second Edition. Baillière, Tindall and Cox, London, 1925. 12s. 6d.

Bollman. (1928.) Quoted by Markowitz (see below).

Chick, H., Macrae, T. F., Martin, A. J. P., and Martin, C. J. (1938.) Curative action of nicotinic acid on pigs suffering from the effects of a diet consisting largely of maize. *Biochem. J.* **32**. 1. pp. 10-12.

Dabrowska, W. (1932.) Sur la composition clinique de la secretia lactee du jabot du Pigeon par rapport au taux d'accroissement des pigeonneaux. *C.R. Soc. Biol. Paris*. **110**. pp. 1091-1093.

Dukes, H. H. (1937.) Physiology of Domestic Animals. Baillière, Tindall and Cox.

Gaddum, J. H. (1938.) Private communication.

Graham, Stanley, and Morris, Noah. (1933.) Acidosis and Alkalosis. p. 111. E. and S. Livingstone, Edinburgh, 1933. 7s. 6d.

Gye, W. E. (1937.) Thirty-fifth Annual Report, Imperial Cancer Research Fund. pp. 15-16.

Green, H. H. (1934.) *Veterinary Bulletin*, IV, No. 2. p. 135. (Abstractor's note relative to article by Heimann.)

Hadfield, G., and Garrod, L. P. (1934.) Recent Advances in Pathology. p. 438. J. and A. Churchill, London, 1934. 15s.

Heimann, F. (1933.) Ueber Bilirubinbelastungen bei Herbivoren unter normalen und pathologischen Bedingungen. *Biochem. Zschr.* **263**. pp. 316-322.

Holmes, Eric. (1937.) The Metabolism of Living Tissues. University Press, Cambridge, 1937. 7s. 6d.

Krzywanek, F. W. (1933.) Die Physiologie des Wiederkauens. *Tierärztl. Rdsch.* **39**. pp. 457-462.

Kuno, Yas. (1934.) Physiology of Human Perspiration. J. and A. Churchill, 1934. 12s. 6d.

Mangold, E. (1933.) Die Infusorien des Pansens und ihre Bedeutung für die Ernährung der Wiederkäuern. *Biedermanns Zlb. A.* **3**. pp. 161-187.

Markowitz, J. (1937.) Textbook of Experimental Surgery. pp. 440. Baillière, Tindall and Cox, London. 1937. 30s.

Thomas, R. G. (1933.) The Distribution of Calcium between Blood Plasma and Erythrocytes. *Austr. J. Exp. Bio. and Med. Sc.* **11**. p. 109-118.

Trautmann, A. (1933.) Beitrage zur Physiologie des Wiederkauermagens. VI Mitteilung. *Arch. Tierernährung u. Tierzucht*. **9**. pp. 178-193.

Trautmann, A., and Schmitt, J. (1932.) *Arch. wiss prakt. Tierhlk.* **65**. pp. 559-573.

. . . . .

Discussion

Mr. A. T. Phillipson (Institute of Animal Pathology, Cambridge), who was the first of the four openers of the discussion, said:—

Mr. Blount must be congratulated on putting before us a tremendous amount of material; in fact, he has touched on such a multitude of subjects that I am afraid my knowledge is only sufficient to enable me to discuss a few of them adequately.

As acetyl-choline is now in use in practice, I think it is necessary that its full physiological significance should be discussed as Mr. Blount has only touched on the practical aspect of its action, namely, that on the alimentary canal. The history of the work on acetyl-choline which has led up to modern theory of the chemical transmission of the nervous impulse at nerve endings makes very interesting reading and can be traced back to 1863. An excellent account of it is given in the Fifth Edition of Recent Advances in Physiology. The present position is that acetyl-choline is liberated not only by parasympathetic nerve endings but also at vasodilatory fibre nerve endings, (sympathetic fibres) at the synapses between pre-ganglionic and post-ganglionic sympathetic fibres, while more recent work shows that it is also liberated at the myo-neural junction of voluntary muscle. Dale has classified the parasympathetic and vaso-dilatory effects as the muscarine-like action of acetyl-choline, while the ganglionic and voluntary muscle effects seen after the injection of atropine, he has called the nicotine-like action. There are still objections to the theory that acetyl-choline actually is responsible for the transmission of the nervous impulse at the sympathetic glanglion and also at the voluntary muscle nerve endings, but the fact remains that it is liberated on stimulation of the appropriate nerve and that the amount liberated is sufficient to stimulate a passage of an impulse down the post-ganglionic fibres on the one hand and to cause contraction of the voluntary muscle on the

other; the time factors involved, however, cannot yet be made to fit into the theory to the satisfaction of all.

As Mr. Blount has said, eserine inhibits the action of the choline esterase which is responsible for the rapid hydrolysis of acetyl-choline into choline and acetic acid and it has been suggested, in view of this action, that eserine should be used together with acetyl-choline to prolong its otherwise very transient effect. I suggest, however, that one should be very careful in using these two drugs in combination because of the great biological activity of acetyl-choline. Acetyl-choline has been isolated from brain and there is a little evidence to show that an acetyl-choline-like substance is produced by the passage of an impulse along a nerve. I think no one would be surprised if this substance were shown to be of fundamental importance in the transmission of nerve impulses throughout the whole central nervous system. The presence of the esterase makes its use safe, but the use of eserine at the same time is contra-indicated.

Myasthenia gravis in man is now treated by injections of eserine or more lately by prostigmine in combination with atropine. Patients suffering from this disease show marked weakness and can be made temporarily normal by injections of these substances. This adds evidence to the transmission of the nervous impulse at voluntary muscle nerve endings, the possibility being either that insufficient acetyl-choline is produced to transmit the impulse or that it is too rapidly broken down. At any rate, the use of eserine will give the patients normal life for four hours, atropine being necessary to eliminate visceral effects.

Mr. Blount has suggested that acetyl-choline is liberated from the spleen when that organ contracts under the strain of fear or emotion. I have not been able to find any evidence on this point. In fact, normally the spleen contracts rhythmically and so presumably there should be a regular liberation of acetyl-choline. The antagonistic actions of the parasympathetic and sympathetic nervous systems have been one of the foundations of physiology. Recent work, however, raises some doubt on the subject. McSwiney and his school have shown that stimulation of the vagus (parasympathetic) does not necessarily produce contraction of the stomach. The response depends on the state of tone of the organ for if it is relaxed it contracts but if it is already contracted it relaxes. Similarly the result of sympathetic stimulation depends on the state of tone in the stomach. A stomach in which both vagi are cut is often more active and has a quicker initial emptying time than one in which they are intact. These observations together with the fact that some sympathetic fibres have been proved to be cholinergic fibres suggest that soon the hard-and-fast rules of sympathetic and parasympathetic antagonism may have to be revised.

In regard to the posterior pituitary, no one disputes that the oxytocic and vasopressin factors are present but the position in regard to the anti-diuretic factor is not so secure. Evidence is conflicting as the following points illustrate.

(1) Diabetes insipidus is often associated with lesions in the posterior pituitary.

(2) Injection of pituitrin in some cases, not all, will establish normal renal function.

(3) Dogs in which the posterior lobe of the pituitary is removed develop only a temporary polyurea.

(4) If the tuber cinereum (the stalk of the pituitary) is clipped marked persistent polyurea is produced.

(5) Damage to the regions of the hypothalamus adjacent to the tuber cinereum will produce persistent polyurea and this cannot be controlled by pituitrin.

From these findings two possibilities occur:—(1) A diencephalo-hypophyseal mechanism is present which can be broken at the nucleus, fibre tract or hypophysis, any break causing polyurea. (2) There are two separate mechanisms, one nervous in origin and one dependent on the action of hormones. Probably the nervous mechanism is the most important.

I should be glad to hear what is behind Mr. Blount's suggestion that epilepsy and eclampsia are caused by water retention due to over-activity of this mechanism—possibly it may throw some light on this question.

In dealing with prolactin I think it should be mentioned that prolactin can only cause a mammary gland to lactate following previous treatment with oestrin. Progesterone appears to be unnecessary but must be present if full development of the gland is to take place.

In discussing the liver Mr. Blount has quoted Markowitz as having shown that ligation of the portal vein does not produce ascites. In his recently published book Markowitz describes the operation of ligation of the portal vein but only as the second stage of the three stage operation for hepatectomy. The first stage consists in making a reverse Eck-fistula so that blood from the inferior vena cava flows into the portal vein. The dog is then allowed some weeks to recover from the operation so that collateral circulation *via* the vena azygos can occur to relieve the portal vein of its extra burden of blood. The second stage is now carried out when the portal vein is ligated above the fistula. Markowitz is careful to point out that should the intestines become cyanosed the ligature should be partially loosened so that only two-thirds of the vein is occluded and that at a further operation it should be completely ligated. This is obviously because the blood from the portal vein has now to find its way to the heart *via* the inferior vena cava

and the collateral circulations previously set up. If this is too great a strain at one operation it must be done in two parts. It is not surprising that under such conditions no ascites develops. I should like to know if this is the operation to which Mr. Blount refers, for should a dog survive long enough after simple ligation of the portal vein for the experiment to be of any value, I find it hard to believe that no ascites would develop.

The final symptoms following hepatectomy are very similar to those of milk fever according to Markowitz's description, but otherwise I do not see much analogy between the two conditions. Hypoglycaemia characterises hepatectomy while the rise in blood sugar is a common finding in milk fever, and according to Greig and Udall, lesions in the liver are rare.

Regarding rumination, "tubing" a cow does not prevent the operation occurring. Colin, Toussaint, Wester and Stigler have all shown that cows and goats can still ruminate when "tubed" and the tube is left unstoppered. They may take two or three days to learn to ruminate and the act is only produced with much greater effort than under normal conditions, involving a strong inspiratory movement of the thoracic wall and diaphragm followed by a strong expiratory movement of the abdominal wall. Stigler has made the most comprehensive study of the act of rumination and although he agrees essentially with the old theory of Chaveau and Toussaint, he has finally cleared up all the objections raised against this theory, particularly those by Foa and Wester. Wester took exception to Chaveau's theory because cows can ruminate although "tubed" and this led him to suppose that the oesophagus was the main organ concerned. Some experimental evidence was produced in favour of this theory. Stigler, however, has succeeded in recording graphically all the movements of the act of rumination and has actually observed the act in a goat in front of the X-ray screen. He has also recorded for the first time the anti-peristaltic wave of the oesophagus intrathoracically which carries the regurgitated ingesta to the mouth. He divides the act into two phases, those of suction and expression. Rumination is preceded by the swallowing of saliva as seen by Wester, presumably to lubricate the oesophagus. A wave of contraction now passes down the oesophagus and closes the thoracic portion forcing out any contained air. The suction phase starts by closure of the glottis; the cow slightly extends her head, presumably to close the cervical oesophagus at the same time as an inspiratory movement occurs in which the diaphragm plays the most important part. The fall in pressure in the thorax dilates the thoracic oesophagus, the cardia opens widely and fluid ingesta is sucked up to fill completely the thoracic oesophagus. The cardia closes and the expression phase begins. The diaphragm now relaxes, an expiratory movement of the thoracic walls takes place while the glottis is still closed, the abdominal muscle contracts slightly and presses the abdominal viscera against the diaphragm thus increasing both abdominal and thoracic pressure. These movements all help to expel the regurgitated ingesta from the thoracic to the cervical portion of the oesophagus, but the main factor is an anti-peristaltic wave of the oesophagus which starts from the cardia immediately it closes and drives the ingesta up to the mouth at a steady, constant speed. The fluid regurgitate is swallowed, though sometimes this happens before all the ingesta has reached the mouth and the last part is reswallowed. The cardia opens again as the fluid reaches it. The glottis also opens and the expression phase is over. The act of rumination is concluded by the swallowing of the solid bolus.

Trautmann's work on the power of absorption of the rumen, reticulum and omasum is not so conclusive as Mr. Blount would infer. Trautmann showed that pilocarpine, atropine and the urinary antiseptic, pyridium, were absorbed from the rumen. This is not remarkable when one considers that pilocarpine and atropine are absorbed from any serous or mucous surface. He claims also to have shown that water is absorbed from the rumen. For his experiments the rumen had to be washed out. Trautmann says that the walls soon become dry and attributes this to absorption; he also claims to have watched water stained with methylene blue disappear from the surface of the rumen. I think it is possible that evaporation played some part in these experiments. In contrast, Aggazzotti, in 1910, concluded from his experiments that although water absorption in the reticulum and rumen was practically negligible, the omasum could absorb considerable quantities. As far as I can ascertain there is no evidence to show that glucose, fats, lower fatty acids, amino-acids or any other food substance is absorbed by the rumen or reticulum. The point is very interesting and important and should be thoroughly investigated.

The infusoria of the rumen present another problem. There are two schools of thought regarding their significance. Mangold's school holds that they are symbiotic and assist the ruminant by converting starch into glycogen and vegetable protein into animal protein, and consequently are beneficial to the host. Becker's school in America, on the other hand, hold that they are harmless commensals which live up to the margin of subsistence provided in the rumen but have no beneficial or harmful significance. Becker's school has produced definite evidence that these ciliates play no part in the breakdown of cellulose. Two lots of animals

were used in the experiment; one lot was defaunated by starving and dosing with copper sulphate while the other group retained their normal fauna. A diet, high in cellulose, was fed equally to both, and digestion trials failed to show that either of the groups was able to digest cellulose better than the other.

Cellulose is broken down by bacteria and passes through the stage of glucose to the lower fatty acids according to recent work of Woodman at Cambridge and Marsden in Australia. The acids produced are mainly proprionic, acetic and lactic acids. By feeding trials it has been repeatedly shown that cellulose is only slightly inferior to starch in feeding value; on account of this it seems possible that the liver of ruminants has some means of converting these fatty acids to glycogen. It is known that liver can form glycogen from lactic acid of muscle origin. Why should it not be able to form glycogen from acetic and proprionic acids also?

In concluding, I must thank Mr. Blount for his very interesting paper; he has done a great service in emphasising the possibilities of applied physiology in veterinary practice. One could wish that he had been able to give us further examples of more definite clinical applications but a great deal of work is necessary on the various points he has raised before their significance in practice can be determined.

Mr. E. G. White (Research Institute in Animal Pathology, London):—

May I first add my quota of thanks to Mr. Blount for a very interesting paper in which he has attempted, within the short time at his disposal, to summarise a very considerable volume of recent physiological research. As much of this has been critically discussed by Mr. Phillipson, I propose to confine my remarks to one or two aspects not already mentioned and which may be of interest to the practitioner.

A very interesting monograph[1] was published in 1934 from the Institute for Diseases of the Horse's Hoof in Stockholm, and has not received the attention it deserved, due to the inaccessibility of the journal in which it appeared. All aspects of the problem of laminitis are dealt with exhaustively and a large number of experiments were carried out in an attempt to reproduce the disease. Feeding cultures of a variety of fungi commonly found on grain was not successful: extracts prepared by treating grain in various ways in order to produce chemical substances normally formed in the alimentary canal by the action of enzymes, bacteria and fungi were also without result except in the case of histamine. Subcutaneous or intravenous injection of this substance produces symptoms closely resembling those of laminitis and animals slaughtered during the attack showed similar lesions to those found in naturally occurring laminitis. Histamine is produced in the intestine by the action of *Bact. coli* on histidine and a diet rich in corn together with the administration of a culture of *Bact. coli* was usually successful in reproducing the disease whilst either procedure alone was without result. It is suggested that the peculiar vascular arrangement in the hoof and the ease with which venous stasis occurs in this region when the animal is standing in the stall account for the apparent predilection seat of histamine in this area of the vascular system.

Regarding the occurrence of scurvy in the domestic animals, this disease has recently been produced experimentally in the pig[2] but is considered unlikely to occur under natural conditions. The lesions found were exactly similar to those of infantile scurvy in man. One or two naturally occurring cases of scurvy have also been described in the dog and these responded readily to the administration of lemon juice.

Recent experiments[3] indicate that there is no evidence to suggest that vitamins B and D are related to canine distemper, and they are therefore unlikely to be of service either in its prevention or treatment. Evidence regarding the possible influence of vitamin A is, I believe, not yet available.

Regeneration of the liver is, as Mr. Blount has stated, a very remarkable process—rats from which three-quarters of the liver has been surgically removed have completely regenerated this organ three weeks later. In pigs to which we have given 0·6 c.c. of carbon tetrachloride subcutaneously, about half of every liver lobule shows complete necrosis about 24 hours later. After 48 hours regeneration is occurring and the debris is being carried away. After a week, little trace remains of the severe damage except for some lipoid material representing the remains of the necrotic tissue, mainly within phagocytic cells. It is surprising to find such animals normal throughout this time; they cannot be distinguished from their litter mates in any way. This is striking evidence of the reserve of functional ability available in an animal's liver.

The formation of calculi within the urinary tract is little understood and some light may be thrown on the problem by a recent paper.[4] In examining a large number of human kidneys, small plaques of calcium salts were found beneath the mucous membrane of the renal papillae; over some of these there was noted a destruction of the overlying mucosa and the plaques thus lay exposed. Concretions of calcium salts were often found growing from such plaques into the calyces of the kidney. Rather similar lesions can be produced in rats by hyperparathyroidism, overdoses of vitamin D, or by an imbalanced though adequate diet. These findings may be of importance in the genesis of urinary calculi in the domestic animals.

Finally, the subject of pyometra in the bitch is one which I think can be understood if one realises that there exist all transitions between an early cystic hyperplasia of the uterine glands and the most advanced and, if metrectomy is not carried out, invariably fatal pyometra.

The onset of symptoms at a very definite time interval, six to eight weeks, after oestrus, and the results of examination of the uterus and ovaries at different stages of the disease force one to conclude that the primary condition is due to endocrine dysfunction, bacterial invasion probably being secondary and the result of the abnormality of the endometrium. Some cases may even show a sterile uterus.

References

[1]*Skand. Archiv f. Physiol.* (1934.).
[2]*Wien. tierärztl. Mschr.* (1937.) 577-589.
[3]*Tierernährung.* (1937.) 142-172.
[4]*Ann. Surg.* June, 1937.

Mr. C. W. Ottaway (Royal Veterinary College): I do not intend to give any practical demonstration such as Mr. Blount has done, but might I say that, as the essayist appears so keen on practical efforts, it is a pity that he did not have twins so that he could have had a control for his experiment. (Laughter.)

One thing that particularly struck me about the paper was the fact that with increased physiological knowledge, new actions of drugs, and new functions of the endocine glands, have been discovered. Other experiments have shown that there is some property common to all the endocrine glands. It has been suggested by a physiologist that the nature of this property is related to the general activity of the sympathetic nervous system. If we bear that fact in mind, we are not so likely to be confused when we find that two substances or two glands have a similar action. To my mind a study of that connection between the endocrine glands and the sympathetic nervous system offers a tremendous field of research.

In connection with the inhibitory action of esterase on acetyl-choline, I wonder if the very powerful action of strychnine on the parasympathetic nerves is due to the fact that it possesses an inhibitory action on esterase similar to that of esserine, which has been mentioned by Mr. Blount.

It was interesting to hear that yet one more function has been discovered in connection with the posterior pituitary gland. I wonder if the use of this product of that gland would be indicated, along with that of large quantities of water, in cases of dehydration of the tissues following irritant poisons.

Mr. Blount has said a great deal about the liver, and I gather from his remarks that its functions are more complex than is commonly believed. One function of the liver is to convert blood bilirubin into bile bilirubin. I think that this function may have some bearing on the Van den Bergh and other tests. The subject of the ruminant stomach is very vast, and we have had a very able dissertation on that from Mr. Phillipson. There was one point that struck me when Mr. Blount was talking about the regeneration of organs, and that was that the rumen and reticulum also have powers of regeneration, and that they seem to be regenerated more quickly when the diet is fibrous and not liquid. I do not think that there is any doubt that the oesophageal groove in the calf is used for the passage of liquids direct into the abomasum; I think, indeed, that that is the chief function of the groove. It has been shown that warm liquids produce closure of the groove more readily than do cold, a point that should be borne in mind when pail-feeding calves. In adult ruminants it has been shown that no food at all traverses the oesophageal groove. Wester has stated that the function of the groove in the adult animal is to stimulate contractions of the stomach, particularly the reticulum, which organ plays such an important part in rumination and regurgitation. Mönnig and Quinn, in South Africa, have shown that closure of the groove could be produced in adult ruminants by the administration of certain drugs, after which drugs would pass direct into the abomasum. The closure is produced reflexly by stimulation of the pharyngeal mucosa.

Mr. Blount has suggested that much of this work has been wasted, as more absorption occurs from the reticulum and rumen than from the abomasum. This may be so, but Mönnig and Quinn were not attempting to get a quicker absorption of a drug. They were attempting to administer a drug which would have a direct action on the abomasal contents, in this case parasites. The fact that greater absorptive powers do exist in the rumen—if they do—would, if anything, facilitate this action. As copper sulphate has been used (in this connection) both as a vermifuge and as an agent which closes the groove, the correct method of dosing with this drug would be first of all to allow a little to come into contact with the pharyngeal mucosa and so stimulate the reflex—then the remainder of the dose could be given.

I thought that Mr. Blount would make some reference to the physiology of milking. According to Hammond, at the commencement of milking the pressure in the udder rises considerably due to erection of the udder, caused reflexly by massage of the teat. This is very important as it will cause the udder to act like a sponge, as it were, by forcing the milk from the alveolar ducts into other ducts and finally into the cisterns. This ensures that the maximum amount of milk can be given at one particular milking. Two theories are put forward to account for

this erection. One theory is that there is an erection of the muscle fibres surrounding the ducts; another, that it is due to a passive congestion brought about by a contraction of the walls of the large veins which drain the udder. As the network of veins at the base of the udder is very complicated, the latter theory appears to be the most likely one.

A lot of difficulty has been found in ascertaining a suitable spot at which to take a sample of arterial blood about to enter the udder, but investigators have now said that it could be easily taken from the internal iliac artery through the rectum—it does not seem very easy to me.

I am very interested in the great problem of the application not only of physiology, but of all the so-called academic subjects with which we come into contact. I often wonder just how much of those so-called academic subjects, such as anatomy, physiology and histology, a veterinary surgeon is expected to know and apply. Without going into this matter very deeply, it seems to me that the answers to my thoughts depend on the value we place on diagnosis. I think that no one would disagree with me when I say that in some cases with which the veterinary surgeon is confronted it is impossible for him to give a full diagnosis without a knowledge of those subjects. Why then do we not apply that knowledge? I think that it is because in the majority of cases we have not got the knowledge to apply. We cannot altogether blame ourselves for that, as the average veterinary surgeon has not had the facilities, either at college, or afterwards, to perfect that knowledge of which he has been taught the fundamentals. At the moment, the greatest amount of work on these subjects has been done by non-veterinarians, at least in this country, but the fact that it can be done has been shown by Mr. Blount, Mr. Phillipson and Mr. White. If that state of affairs is allowed to exist there will be no encouragement at all to the young graduate to follow that important line of study. The pure physiologist cannot go further than to indicate to us that there is work that may be applied: we, as veterinary surgeons, are the people who should decide whether or not that work should be applied. The memorandum addressed to the Loveday Committee from the Students' Union of the Royal Veterinary College shows that the students there deplore the fact that facilities are not available at the College for seeing the results and practical application of research in:—

(1) The Control of Contagious Disease.
(2) Genetics and Breeding.
(3) Dietetics and Hygiene.
(4) Physiology and Pharmacology as applied to the Domestic Animal.

There is no doubt, however, that the facilities now afforded at the Royal Veterinary College are better than they were. I consider the proper application of physiology, and of all the other so-called academic subjects, which could be such an aid to diagnosis, to be of fundamental importance. Apart from anything else, it would give us a large pull over the "quack" and would so enhance the prestige of the profession.

Dr. H. Rosenberg (Royal Veterinary College):—

As I feel hardly competent to add anything to Mr. Blount's excellent paper, I will confine myself to a few remarks.

(1) It has been shown recently that the original sub-division of the efferent autonomic system into sympathetic and parasympathetic parts has to be modified. While all the parasympathetic fibres appear to liberate acetyl-choline at their endings as a result of stimulation, some of the sympathetic fibres also release acetyl-choline instead of adrenine, *i.e.*, there seem to be cholinergic and adrenergic sympathetic endings. Some such irregularities were to be expected since it was well known that the sweat glands which anatomically have a sympathetic nerve supply are stimulated by pilocarpine and paralysed by atropine as are parasympathetic effects in other organs. The stimulation of the splanchnic nerve and of the preganglionic cervical sympathetic also results in a liberation of acetyl-choline in the suprarenal glands and in the cervical ganglia respectively. In addition, it has been suggested that the vasodilator fibres in the posterior roots act on the cutaneous vessels by liberation of a histamine-like substance. Sympathetic and parasympathetic fibres may be intermingled in one trunk as is the case in the frog's vagus, and such an anatomical arrangement may account, at least partly, for the peculiar results which McSwiney and his collaborators obtained in the stimulation of the autonomic gastric nerves.

(2) In man a successful attempt has been made to evaluate the state of activity of the thyroid gland by electrical examination of the properties of the skin (its so-called polarisation capacity). This method may be capable of application to animals in which the measurement of the basal metabolism is difficult.

(3) From own experience I can confirm that there is some connection between liver function and purine metabolism. The dog's liver stores purine bases and uric acid in proportion to the amount of these substances and their precursors present in the animal's food. In disease an impairment of this storage function may lead to a rise of the uric acid level in the blood to which destruction of liver cells may contribute. Functional disorders probably allow peptone-like food products to pass through the liver and to affect the physico-chemical structure of the blood. Such changes can be detected by the simple measurement of the rate of sedimentation of the red corpuscles.

Physiology as a science can supply facts of relative certainty but cannot foresee the extent of their applicability. Hence, while pathological conditions confront physiology with most important problems, physiological research and education must transgress the limits of immediate requirements.

General Discussion

Dr. W. R. Wooldridge said that as he listened to Mr. Blount he had to confess that he personally was getting more and more worried as to exactly where they were going. This was due mainly to the fact that Mr. Blount was set—or had set himself—an impossible task. The scope of the paper was so wide that it was almost impossible to treat it usefully in one short paper presented to an evening meeting. As a result, Mr. Blount had given them a very rapid, superficial and naturally unfinished review of some recent advances in physiology.

In such a review he had been forced to skim over the surface of most of the work with which he had dealt and in order to condense his matter sufficiently he had been compelled to simplify it unduly. As a result he had mis-stated the present position with respect to certain aspects of the knowledge touched upon. Some of these errors had been corrected by Mr. Phillipson and other speakers, but he (Dr. Wooldridge) would make a plea that in future the Society should endeavour to restrict the scope of the subject which they intended to discuss, so that opportunity would be afforded for a particular problem to be dealt with in an informative way. Each of the previous speakers had shown that the best value of such a paper was to be obtained from its subsequent discussion: each had discussed a section of the subject informatively and accurately.

He proposed to treat similarly another important section of physiology that had recently been developed throughout the world. Mr. Blount had again skimmed over the surface of this, but he had not been able, in the time at his disposal, to make a connected story of it. He referred to the subject of cellular and tissue oxidations and the bearing recent knowledge in this subject had upon our understanding of the delicacy of the mechanisms controlling life functions. The essayist had mentioned the fact that certain vitamins had proved to be of importance in the oxidation reactions of the body. He had, however, been rather too definite over our knowledge of the vitamins of the B complex and of the importance of nicotinic acid in pellagra and black tongue in dogs. Recent work on this subject went to show that vitamins were incriminated in those two diseases but it was not yet proved that they were identical or associated definitely with nicotinic acid; it was still too early to make an authoritative statement about that. As the work of isolation and synthesis of the various vitamins proceeded there was little doubt that these problems would be settled.

The importance of the isolation of vitamins lay in the fact that since these substances had been obtained pure, biochemists and physiologists had been able to test out their real function in the body by devising experiments in which other complicating factors were eliminated. It had been found that three of these vitamins were actually associated with the oxidation reactions of the cells of the body. He would suggest that one of the greatest advances that had been made in recent years in physiology was the tremendous increase in our knowledge of the way in which the cells of the body utilised oxygen. This work had emphasised, more than ever, the extremely important fact that life was dependent upon the most delicate balance of reactions proceeding simultaneously in the body. A chemical analysis of any tissue at any time gave results in close agreement with a similar analysis obtained of that tissue at any other time. Such results had led earlier workers to conclude that the substances composing that tissue were present in constant proportions. In actual fact such a deduction was very far from the truth: there was a dynamic state of very many changes occurring simultaneously, yet skilfully controlled so that a general equilibrium existed. The cells were able to utilise the energy obtained from oxidation reactions involving relatively simple products to enable them to synthesise more complex substances.

This work brought home very forcibly the inadequacy of the earlier physiological teaching that many of them received concerning the active biological agents known as enzymes: this teaching had been restricted almost entirely to an examination of the importance of enzymes in digestion. This restriction was most unfortunate, for enzymes were present in every living cell whether it be free living or part of a multicellular organism. The part played by the extracellular enzymes of digestion was probably of less importance than that of the enzymes present in the cells of the body. The majority of the balanced reactions which were essential to life were dependent upon the action of enzymes present in the individual cell, whether that cell belonged to the liver, kidney, blood, brain or other tissue or organ. Each cell was itself a workshop in which many enzymes were bringing about a large number of reactions but which nevertheless maintained the balance necessary to life. Many of these changes were dependent upon the collateral existence of several other changes involving different enzymes which in themselves might be dependent upon several other factors. The importance of this fact, from the clinical and physiological point of view, is that anything which upsets the delicate balance facilitates the subsequent deterioration of the living state of that tissue. For example, if something stops the activity of a particular enzyme, the reaction dependent upon that enzyme will be inhibited and the delicate equilibrium tend to be upset with the result that the activity (or health) of the tissue or organ may become subnormal. Sometimes the resulting dysfunction might be of little consequence, if alternative changes can be utilised by the cell but sometimes the dysfunction might be serious and result in pathological change and possibly the development of some recognisable clinical entity. Many examples might be taken to illustrate this point but it will suffice to refer again to the vitamins. Several of these, particularly vitamin B_1 (or aneurin), vitamin B_2 (or lactoflavine), and vitamin C (or ascorbic acid), had been shown to play important parts associated with biological oxidations, and yet each, in its absence, gave rise to well known clinical conditions. One had been aware for some time that the absence of any of these factors led to disease but it was only recently that knowledge of the part such factors played in biological oxidations was in the process of being brought to light. For the functioning of the cell it was

necessary for the majority of them to receive energy. That energy was largely supplied by oxidation reactions. This oxidation was not effected by the direct action of molecular oxygen but usually through a chain of reactions. In mammals the oxygen is taken up by the blood, passed from the blood pigment to that of the tissues, where it is usually rendered more reactive by a special enzyme before participating in a chain of oxidation reactions important to the metabolism of the cell. In this chain such substances as cytochrome and vitamin C (ascorbic acid) are sometimes essential reactants. In those cells where vitamin C was an essential factor in the oxidation system its absence would lead to impairment of function and ultimately to the clinical manifestations of scurvy. If the missing factor was vitamin B_2 or flavin, then the animal was unable to form Warburg's oxidation enzyme, one of the important enzymes in this type of change. The absence of vitamin B_1 or aneurin, meant that a factor essential to certain oxidations concerned with carbohydrate metabolism of the tissue was missing and further troubles, sometimes manifested clinically, resulted. These few examples clearly illustrate the point that we now possess a vast amount of knowledge which emphasizes the delicacy of the mechanisms which control the life of the cell and clearly illustrate how the lack of one small factor in the chain of reactions, or the presence of something which will inactivate an essential enzyme, will not only diminish the vitality of the tissue or organ concerned but might lead to illness represented by a definite clinical syndrome.

Not only are enzymes important as means of effecting important life processes, but they are sometimes useful in controlling these processes by converting an active physiological substance into something which is inactive. Thus choline-esterase, by its action upon acetylcholine, renders inactive this very active substance and so enables a measure of control to be exercised over the changes associated with the metabolism of nerves.

He had restricted his remarks largely to a discussion of some aspects of cellular metabolism and enzymes, mainly because his own work had been concerned with this branch of physiology, but almost every other branch of physiology touched upon by Mr. Blount could have been dealt with similarly and, in fact, extended into a paper interesting to a Society such as that. Each of such a series of papers would lead to useful discussion and perhaps to some advance in that basic knowledge for which Mr. Ottaway so eloquently pleaded.

Sir Frederick Hobday observed that no one had spoken much from the clinical side, although the physiologists had asked that the clinical aspect should be considered in conjunction with the information that they had brought before them that evening. He therefore proposed to say a few words to them in that connection.

From experience he should say that he would never give a certificate of soundness to a hunter or racehorse that had an enlarged thyroid gland. Experience had taught him that in an animal so affected there was apt to come a time when it would be unthrifty, unable to "stay," and be difficult to keep in condition.

As regarded the question of the presence of teats in the cryptorchid, he always looked for them, and in a very high proportion would be certain not only to find them, but in many cases they would be well developed. In the horse, cow, pig, dog and cat he had seen a good many instances of this.

The question was brought up as to a dog not sweating. He was taught as a student that this animal could not sweat except through the tongue and feet; but if observation was made in dogs, after they had been injected with large doses of cocaine, under the arms and other parts where there was no hair, there would be found literally beads of sweat—especially if that dose was toxic. This proved the presence of sweat glands in those regions.

Mr. White had brought up the prevalence of urinary calculi. It was well known that these could be produced in the male sheep by overfeeding with certain roots; and in canine practice it was found that urinary calculi were much more common in the pampered animal than in the dog that led a hardy existence.

Now that they had a College where team work could be done, he was sure that a great deal more progress would be made in the experimental laboratory—work which would be of real value to the practitioner—for the benefit of his sick patients; as, after all, it was with this object in view that all research should be carried out in our veterinary laboratories. Team work was necessary to bring the laboratory men and the clinical workers together, for the practitioner was really the Alpha and the Omega of the profession; and the laboratory worker—if of a practical turn of mind—could be of the greatest service in helping usefully to bridge the gap in the interminable fight against disease.

Professor G. H. Wooldridge observed that he must say that, after having listened carefully to Mr. Blount and the various speakers that night, he had begun to marvel more and more at the most extraordinary working of tissues and the other functions of animal life, and he marvelled more than ever at the wonders of Creation. He came into that room with certain fairly fixed convictions; he was leaving it not only with some confusion of thought, but with that confusion, engendered during the meeting, much worse confounded. (Laughter.)

As Dr. Rosenberg had said, they wanted, if they could, to pick up some crumbs from the investigations and the results obtained from those investigations, which would enable them to make life more perfect and remedy variations from health wherever they met them. He (the speaker) at any rate would have to sit down and endeavour to pick up what crumbs he could from the enormous mass of information he had received that night.

Unfortunately so many things previously stated as facts by the physiologists had now to be recast, and it made it rather difficult to know how to accept the new statements as proved facts. In many respects it did not make the position of the clinician much, if any, easier.

All he wanted to say was to thank all those who had taken part in the discussion and to express the hope that when he came to read it through he should be able to pick out something that would enable him to apply that information in diagnosis and in the treatment of animal disease.

Mr. N. J. Scorgie, having expressed his thanks to Mr. Blount for his interesting paper, said that he had listened to speaker after speaker who had put in a plea for the academic worker, but to his mind, at a meeting such as that such phrases were waste of time, for it was in the minds of everyone there that academic work was useful.

Mr. Blount had made one or two remarks in respect of vitamins, and he was afraid he (Mr. Scorgie) was once guilty, with very little knowledge, of opening a discussion on them. He agreed with Dr. Wooldridge's observations concerning Mr. Blount's remarks about nicotinic acid. So far as he could make out, vitamin B_2 was now identified with lactoflavin and not with nicotinic acid as Mr. Blount had stated. Recently published work (in 1937) seemed to suggest that nicotinic acid or nicotinic acid amide was identical with the P-P factor whose absence from the diet was responsible for human pellagra and canine black tongue, which was possibly the same condition known in this country as "Stuttgart disease."

The speaker now referred to work carried out by Dr. Innes, at Cambridge, which showed that dogs were capable of synthesising vitamin C in their own livers. In connection with Mr. White's references to vitamin B in canine distemper, Mr. Scorgie drew attention to a very interesting paper, published in eight instalments in *Veterinary Medicine* (Chicago), in 1937, in which Fröhring, the author, suggested, on very little grounds, that the difficulty which Laidlaw and Dunkin had in finding puppies susceptible to the distemper virus might be due to the fact that they were carrying high vitamin A reserves in the liver. That, he thought was worthy of investigation.

The President said that that night they had really had a plethora of mental stimuli; so much so, that he thought the palms of his hands were sweating more than they had done since he had been at the Royal Veterinary College. He had, of course, in common with them all, been interested in many points raised by Mr. Blount, but one in particular was as to the existence of scurvy in dogs. He believed that scurvy did occur in dogs: he had had several cases which completely resembled scurvy in children. Unfortunately he knew a good deal about scurvy in children because his own son had suffered from the complaint due to his (the President's) reliance on a certain proprietary vitamin food, and since that time he had seen many dogs which presented a condition exactly resembling that appearing in the child. The symptoms which he considered indicated scurvy in dogs were the tumefaction of the gums, a softening of the tooth beds—the canines could be moved; the animals were unthrifty, their joints were sore, and they were apt to whine, while they suffered a considerable degree of anorexia.

If they X-rayed those cases they would find that decalcification took place as was observed in children. In one dog the epiphyses were affected and also the bodies of the vertebrae in the lumbar region; so much so that one of the lumbar vertebrae had undergone what one would practically call a crushed fracture.

Those dogs improved almost immediately when they were put on vitamin C. He knew that these clinical findings were contrary to the physiological findings, because the physiologists told them that a dog could not have scurvy because it could synthesise its own vitamin C.

Following upon these remarks, the President made a suggestion, which was adopted by the meeting and cordially endorsed by the essayist, that Mr. Blount should, owing to the lateness of the hour, make his reply in summary, but prepare a full response for publication in the *Veterinary Record.*

The Reply

Mr. Blount said that before replying to the various speakers who had taken part in the discussion, he desired first to say how very much he had enjoyed that evening, and that he was most satisfied at the reception they had given that paper on physiology.

He would like to thank Mr. Phillipson for the initial opening of the discussion and especially for bringing before their notice the newer facts relative to acetyl-choline. He must confess that unfortunately, although he endeavoured to keep abreast of the "recent advances" series of textbooks, there were now so many new editions that he had not yet got the fifth edition in Physiology, but he should read the paragraphs mentioned with great interest.

Surely there was no reason why the contractions of the spleen under fear or emotion should not be considerably stronger than normal, and as such, a greater amount of the acetyl-choline would be liberated for action on the intestines and elsewhere?

Both Mr. Phillipson and Dr. Rosenberg had pointed out that the original conception of the antagonistic action between the sympathetic and parasympathetic nervous system was now understood to be less secure than was at first thought.

With reference to the anti-diuretic pituitary factor, although the site of origin might be debatable, he thought it must be agreed that there was a good deal of evidence to support its existence.

The point with regard to hysteria in dogs and the anti-diuretic factor was as follows. Some ten years ago, he had the opportunity, in association with Professor Mitchell of the Royal (Dick) Veterinary College, Edinburgh, of carrying out blood examinations on a rather interesting case of hysteria. The only blood change of importance was a depletion of the body fluids with a concomitant stagnation of the red blood corpuscles, so that total red blood corpuscle counts were much higher than normal. Was this perhaps associated with a lack of anti-diuretic pituitary endocrine?

With reference to prolactin, he would like to point out that this acted directly on the crop of the pigeon and did not require preliminary treatment with oestrin.

Concerning the liver and ascites, the two clinical points he wished to make were, firstly, that following experimental work Markowitz believed that the dropsy of clinical cirrhosis was less the result of portal stasis than that it was an event in failing liver function. Markowitz stated that next to the recovery of a moribund dehepatised dog with glucose, "There is no more striking fact in physiology than to see the abdomen of an emaciated dog become greatly prominent overnight following a meal of meat." It would seem a sound practice, therefore, to avoid meat and especially meat extracts when there is any question of liver failure—a point especially applicable to canine practice.

Mr. Phillipson stated that hyperglycaemia was a common finding in milk fever. If he remembered correctly, there had been a good deal of work to show that the blood sugar in that disease varied both above and below normal, and he could not remember that it had been proved that in the convulsive stages there might not be a hypoglycaemia.

Mr. Phillipson's account of the modern interpretation of the physiology of rumination must,

of course, have proved most interesting to them all, but although tubing a cow did not permanently prevent rumination taking place, it did cause the act to be produced with a good deal more effort than under normal conditions. Therefore, since rumination was so essential to the life of the dairy cow, he still thought it would be wise to think twice before performing the operation for the prevention of "straining."

Incidentally, if the suction phase quoted by Mr. Phillipson started by closure of the glottis, it would seem extremely difficult for the cervical oesophagus to be involved in the process after tubing. What was the explanation, please?

Might he point out that the study of rumination was not yet finished—indeed, even the comparatively simple subject of prehension in cattle was far from understood, and anyone taking the trouble to watch ruminating cattle would note that the function was performed somewhat differently from that described in text-books, and he believed that careful observation would show that even the story as outlined by Mr. Phillipson was not the final one.

Regarding the power of absorption of the rumen, he would like to quote from the *Veterinary Bulletin* as follows: *Veterinary Bulletin, May,* 1934—*page* 390. "*The Physiology of Rumination*" *by Krzywanek,* 1933.

> "Ruminants with even unilateral pneumothorax are unable to regurgitate and those with a tracheal opening have difficulty in doing so. . . ."

Page 391.

> "In addition, working on the assumption that sugar is not absorbed from the rumen, the author gave sugar solution to sheep and tested the blood for sugar increase, an increase being assumed to indicate absorption from the abomasum [this assumption has been proved tenable by Trautmann (this Bulletin 3, 572) who showed that absorption can take place from the rumen]"—J. E.

Veterinary Bulletin, April, 1934 , *page* 278. "*Absorption from the ruminant stomach,*" *Trautmann,* 1933.

> "The author concludes that the rumen, reticulum and omasum are capable of rapid absorption of water and of substances in solution, and that absorption is equally rapid in the first two of these compartments; that the abomasum also absorbs, although more slowly; and that the widely held view that protective mucosae are only permeable with difficulty to water and aqueous solutions must be revised."—H. H. Green.

He was particularly indebted to Mr. White for his remarks, especially those dealing with the problem of laminitis, and of liver regeneration following the administration of carbon tetrachloride to rats. His observations on the subject of pyometra in the bitch were also of important clinical interest.

Mr. Ottoway little knew that he spoke the truth when he said it was a pity that he (Mr. Blount) did not have twins so that he could have a control for his experiment relative to low fat tolerance! This point, however (low fat tolerance—*see* paper) was one which had been worked out in theory and practice, and was quoted in many text-books on the diseases of children, so that his one additional control animal would prove of little importance!

Mr. Ottoway would appreciate that apart from the question of udder function, there were many other aspects of physiology which were not introduced into the paper. Indeed, Dr. Wooldridge, perhaps with others, felt that too much had already been introduced, but in connection with milking, he did not know of any special new point which would be of clinical interest, except perhaps the relationship between present-day teat bougies and the teat sphincter.

He was also indebted to Dr. Rosenberg for his amplification of the remarks by Mr. Phillipson on the autonomic nervous system and was sorry that he felt an examination of blood uric acid would not be of value as an estimation of liver function, but he was merely quoting the experience and work of Markowitz. He was also pleased that he had introduced the question of red corpuscle sedimentation, since haematology was a subject rarely discussed by practitioners, yet on many occasions of the greatest use to them.

He had forgotten, if he ever knew, that strychnine had a powerful action on the parasympathetic nerves, because as far as he could remember one was taught that its action was to accelerate the passage of the nervous impulse through the sinapses, especially those of the spinal cord; but he was grateful to Mr. Ottoway for mentioning that subject.

Regarding the effect of copper sulphate in ruminants in causing closure of the oesphageal groove, he did not think it was right to assume that the giving of drugs by this method, *i.e.*, following a short initial dose of copper sulphate, would necessarily ensure that even the majority of the drench would pass direct to the fourth stomach. Indeed, there seemed a good deal of practical evidence to show that many drenches consisting of copper sulphate, arsenic, etc., passed in the main to the rumen, but perhaps our technique of giving a sip of copper sulphate first had not yet been mastered.

He regretted the necessity to have to cross swords with Dr. Wooldridge, but following his important remarks, he should explain that the paper and its title were chosen by him (Mr. Blount)—the object being to present to the Society some of the recent advances in veterinary physiology and to indicate some of their possible clinical applications. Dr. Wooldridge felt that was an impossible task and, as a result, the subject had only been skimmed over. Whether it had been an impossible task was for them to decide, but it had certainly been interesting and he hoped that the skimming process had brought to the surface some cream of knowledge, which they would otherwise not have drunk. Apparently, Dr. Wooldridge would rather they had had a dissertation on one aspect of physiology, but with this he entirely disagreed, for to his mind it was only by presenting a number of facts that one was able to maintain the interest of all present. No doubt there were errors in the paper, for which he apologised. He did not prepare it with that degree of accuracy necessary for the presentation of a doctorship thesis, but he hoped the great majority of the statements were either true or quoted correctly from the authorities indicated in the references. Again, he was sorry to disagree with Dr. Wooldridge concerning the paragraph which he wrote on our knowledge of the vitamin B complex. He thought if he would re-read it, he would agree that the statements regarding nicotinic acid were true. Indeed, as far as present evidence went, nicotinic acid might be considered to be the actual pellagra-preventing portion of the vitamin B_2 complex. Bacharach had pointed out that the recent paper of Spies in the *Lancet* helped to clear up a further difficulty, for it appeared that

many pellagrins suffered from B_1 shortage, as well as a deficiency of the pellagra-preventing factor. This, therefore, fully explained the fact why some cases of the disease (pellagra) did not respond to nicotinic acid or its amide.

He was, however, very glad that Dr. Wooldridge took the opportunity of explaining some of the facts relative to some of the oxidation reactions of the body, for, of course, it was well-known that this aspect of bio-chemistry was one in which he had specially interested himself for some time. He hoped, however, he did not expect him to speak at the same length on each aspect of physiology mentioned in the paper.

He was very grateful to Sir Frederick Hobday for answering three of the clinical points raised. He was not aware that dogs did sweat, even under the influence of cocaine poisoning. Perhaps the glands concerned were those of the apocrine series mentioned in the paper.

It was indeed different to visualise Professor Wooldridge confused, for one knew of his clear-headed reasoning on all matters clinical. He hoped, therefore, following the reading of the subject matter, he would find the paper relatively clear.

It was interesting to note that Mr. Scorgie considered vitamin C unnecessary as an article of diet for the dog; nevertheless, it would be seen that this was contrary to the opinion of Dr. McCunn, the President, whose account of scurvy in the dog was most interesting.

Dr. Rosenberg's remarks *re* Duke's Veterinary Physiology text-book were illuminating, and it seemed a great pity that a group of specialists in this country could not collaborate to write an interesting account of clinical veterinary physiology for students and practitioners. He quite agreed, however, with this speaker that much of the teaching regarding enzymes had for too long been restricted to their study in relation to digestion, and it would be extremely valuable if Dr. Wooldridge could find the time to write an adequate account of some other aspects of enzyme activity in the animal body.

Finally, might he take that opportunity of thanking them for their interest in the subject, and to ask, was it too much to hope that a Veterinary Physiological Society be formed, for there must be many who would be willing to attend such meetings quarterly, the subject matter of which would not necessarily prove interesting at the ordinary meetings of our "National" Divisions.

. . . . . .

Note by Essayist: The following extracts from a letter received from Professor Markowitz, dated May 23rd, 1938, may be of interest:—

> "With respect to your question about tests for hepatic failure in the dog I can only say this: the most delicate test for failing liver function in a dog is the appearance of uric acid in the blood. Normally there is practically none. At the same time I wish to affirm that an animal may have quite severe hepatic failure and yet show a normal uric acid content in the blood. The test is of value only when it is positive.
>
> About the occurrence of ascites, I have this to say: it does not matter how chronic hepatic insufficiency is induced, the giving of meat extract will result in ascites. This phenomenon has been observed under the following circumstances:—
>
> (1) Following ligation of the common bile duct.
>
> (2) Following subtotal hepatectomy in dogs with an Eck fistula.
>
> (3) Following carbon tetrachloride cirrhosis. Ascites can of course be due to other conditions besides hepatic insufficiency, as you point out in your letter. Its occurrence in hepatic insufficiency is not related to back pressure in the portal vein.
>
> With respect to your question about scurvy in dogs, I wish to say that I have only seen this in animals with hepatic insufficiency. The liver does manufacture vitamin C under normal conditions, and when the liver is diseased the vitamin has to be supplied."

CLINICAL COMMUNICATION

Canine Hysteria: Magnesium Lactate Therapy

KATHLEEN M. HERNAMAN-JOHNSON, M.R.C.V.S.
Sutton, Surrey

The following is a selection of cases attended during 1937 on which I have used magnesium lactate therapy for canine hysteria. The suggestion of this line of treatment was made to me by Miss Joshua of the London Veterinary College: she saw it followed in practice by Mr. Maguire, F.R.C.V.S., of Stow-on-the-Wold.

Case No. 1. *Subject.*—Alsatian-Airedale cross, five years old.

History.—Recurrent attacks of hysteria lasting over several months each spring.

Treatment.—May 7th, 1937, 20 c.c., 3½ per cent. sol. magnesium lactate injected intramuscularly. Marked improvement. Able to go for walks. May 11th, further 20 c.c.

Course.—Complete recovery. Destroyed six months later for other causes, without recurrence.

Case No. 2. *Subject.*—Six months cocker pup.

History.—Continual bouts of hysteria since infancy.

Treatment.—June 11th, 1937, 10 c.c. magnesium lactate intramuscularly. June 30th, 10 c.c. magnesium lactate intramuscularly.

Course.—No more attacks of any kind until whelping six months later. One attack immediately prior to parturition. Caesarian operation performed on dead puppy.

Case No. 3. *Subject.*—Three year, 40 pound mongrel.

Symptoms.—Hysteria followed by fits.

Treatment.—June 15th, 1937, 15 c.c. magnesium lactate intramuscularly. June 17th, improved but restless. June 22nd, further 15 c.c. magnesium lactate intramuscularly.

Also treated with Willington's Medical Products Valerian hysteria mixture. 5ii *b.i.d.*
Course.—Relapsed later and was destroyed.

Case No. 4. *Subject.*—Eight year, 20 pound mongrel.
Symptoms.—Irregular heart. Having heart attacks and bouts of hysteria.
Treatment.—July 16th, 1937, 15 c.c. magnesium lactate intramuscularly. Digitalis pills. July 23rd, no more attacks, general health improved. July 27th, 15 c.c. magnesium lactate intramuscularly. A few further attacks.
Course.—July 30th. Improving. Have not been called since.

Case No. 5. *Subject.*—Two year terrier.
Symptoms.—Commencing distemper; three attacks of hysteria.
Treatment.—August 20th, 1937, 15 c.c. magnesium lactate intramuscularly.
Course.—No further attacks. Recovered from distemper uneventfully.

Case No. 6. *Subject.*—Four year Airedale.
History.—Hysteria three days.
Treatment.—August 26th, 1937, 20 c.c. magnesium lactate intramuscularly.
Course.—September 6th. Visited; no further attacks, none since.

Case No. 7. *Subject.*—Seven year hound.
History.—One severe attack of hysteria.
Treatment.—September 8th, 1937, 20 c.c. magnesium lactate intramuscularly.
Course.—September 10th. Recovery complete. No further attacks. Died very suddenly five months later, after what owner described as an epileptic fit.

Case No. 8. *Subject.*—Five year, 30 pound mongrel.
History.—Not exercised, biscuit fed, kept in cellar. Recurrent attacks of hysteria.
Treatment.—November 17th, 1937, 20 c.c. magnesium lactate intramuscularly.
Course.—November 22nd. Complete recovery. Remarks to owner preclude following up this case.

Case No. 9. *Subject.*—One year cocker.
History.—Given to owner, probably on account of attacks.
Treatment.—December 1st, 1937, 15 c.c. magnesium lactate intramuscularly.
Course.—No further attacks. Accidentally mated. Further attacks three weeks after parturition (fed six pups). Pups removed, but all attempts to check hysteria unavailing. Destroyed.

. . . . .

I would like to add a few remarks about the cases, although I do not consider that I have seen a sufficient number to draw any conclusions; moreover, I have not included any occurring after the end of last year, as I consider that a period of at least six months is required before one can say a cure is lasting.

I found in some animals that one injection was sufficient, but in many, although they made improvement immediately, a second dose was of very great benefit.

The type of case benefited was true and uncomplicated hysteria. That due to distemper was rarely helped, the injection being of value in only one case, caught very early.

Pregnancy and lactation appeared to cause a breakdown, but where there was no drainage of milk, the bitch soon returned to normal health.

Where the hysteria was followed by fits, no improvement resulted.

Having tried the treatment on about 20 cases, I feel fully justified in saying that it is a great improvement on older methods, being easy, cheap, spectacular, and permanent in a good percentage of cases.

ABSTRACTS

[Research on Puerperal Diseases of Metabolism: Milk Fever. Meisters, N. (1938.) *Deuts. tierärztl. Wschr.* **46.** 647.]

Estimations were made of the *p*H, sugar, acetone and oxybutyric acid of the blood and urine and the calcium, inorganic phosphate, potassium, sodium and magnesium content of the serum in 16 cases of milk fever. In many cases the estimations were repeated once or twice after recovery. The same work was done on 15 normal heifers in their first lactation, on 17 normal cows at the beginning of lactation, on 13 gravid cows in the middle of lactation and on 18 cows in the last stages of pregnancy.

With the normal animals only slight variations were found, while with the milk fever cases the serum calcium and inorganic phosphate fell to the region of 3·5 and 0·5 mg. per 100 c.c. serum respectively. The lowest normal figures for these constituents were 9·8 and 3·7 mg. per 100 c.c. serum in the heifers. In other puerperal illnesses this did not occur. Acetone in the blood and urine only slightly increased while blood sugar increased from the region of 65 mg. to the region of 69 to 106 mg. per 100 c.c. blood.

The *p*H of the blood varied only with temperature; an increase in temperature accompanied an increase in *p*H, but only a big drop in temperature caused a fall of *p*H. The author considers that *p*H of blood is a better indication of the animal's condition than is the body temperature.

Age, feeding and breeding are discussed in relation to milk fever. The author concludes that the main factors at work in producing milk fever are "the unsuitable composition of the body," poor feeding and the chemical changes accompanying the onset of udder activity.

A. T. P.

* * * * *

[**Diagnosis of Udder Tuberculosis by Histological Sectioning of Milk Deposit.** Pallaske, G. (1938.) *Zschr. Fleisch- u. Milchhyg.* **48.** 11. 201-207.]

As a result of considerable experience in the examination of milk samples for cell groups in smear preparations, controlled by guinea-pig inoculation, it was thought that a better cell picture might be secured if the deposit obtained by spinning the milk, preferably with the addition of some of the cream, were subjected to histological section. Embedding in gelatine—a method in almost universal use in pathological laboratories in Germany—was found successful after first fixing the deposit in 10 per cent. formalin for 24 hours. After washing, the material was embedded in weak and concentrated gelatine solutions (one usually employs 12·5 and 25 per cent. solutions) at 37° C. for 24 hours. The gelatine was allowed to set and the block hardened in 10 per cent. formalin for 12 to 24 hours. It was then cut with the usual type of freezing microtome and the sections fixed to a slide with carbolised serum and stained by the Ziehl-Neelsen method. The whole procedure takes four to five days. Rapid paraffin embedding can be used following dehydration in acetone, the total time for this method being about two days.

The cell picture is much clearer than in smears of deposit, the various types of cells being more readily distinguished, particularly endothelioid and giant cells. Less shrinkage and distortion of the cells results from gelatine embedding than if paraffin is used. Tubercle bacilli are readily recognised, particularly when within the protoplasm of phagocytes. It is easier to distinguish tubercle bacilli from other acid-fast material than in smear preparations.

Sixty-four samples of milk were examined by this method, as well as by smears and guinea-pig inoculation. All three methods were in agreement in 55 cases—33 positive, 22 negative. Of the remaining nine samples, one was positive in smears, negative to the biological test, and in sections showed stout acid-fast rods in relation to particles of dirt. One sample giving a positive biological test showed typical acid-fast organisms in section, but none in smears. Two samples positive to guinea-pig inoculation were negative in both smears and sections. Five samples negative to the biological test and in smears were positive in sections. Of these samples, three showed in section typical Langhans' giant cells, one showed in addition acid-fast bacilli, and one showed only the organisms.

It is not suggested that the method described should replace the smear method, but it emphasised that examination of smears for specific tuberculous cells is essential—endothelioid cells and Langhans' giant cells—and that in cases where the result of examination of smears is doubtful, the individual or quarter samples might with advantage be submitted to the histological method.

[The giant cells found in tuberculous lesions in man and some domestic animals, *e.g.*, horse and ox, are often termed "Langhans' giant cells." The nuclei are situated at the periphery of the cell protoplasm, the latter often containing phagocytosed tubercle bacilli. Other giant cells include foreign body giant cells resulting from chronic irritation, *e.g.*, by a buried suture, Sternberg's giant cells in Hodgkin's disease, and bone marrow giant cells.]

E. G. W.

* * * * *

[**Effect of Sex Hormone on the Skin and Coat of the Bitch.** Kostner. (1938.) *Wien. tierärztl. Mschr.* **25.** 3. 69-83.]

The author discusses the relationship of skin lesions to endocrine disturbances in human beings and experimental animals and goes on to consider the case of the bitch where eczematous lesions may accompany sexual dysfunction. His cases are divided into the following groups:—

(*a*) *Eczema Accompanying Prolonged Oestrus.*—Details are given of five cases (in all ten were treated) in which doses of 300 to 500 units of "pregnyl" were given subcutaneously daily or every second day for four to twelve days. The dose varied with the size of the patient, being about 20 units per pound body weight per day for five to six days. In every case healing of the skin lesions was rapid and concurrent with the correction of the sexual cycle.

(*b*) *Eczema in Adult Bitches Which Had Never Shown Signs of Oestrus.*—Three cases are mentioned, one of which was completely cured and the others only temporarily improved. The successful treatment was as follows: For 14 days subcutaneous injection of 5,000 units of folliculin were given daily. Seven days after the last injection false oestrus was noticed and treatment with gonadotropic hormone was given in increasing doses, commencing with 50 units, until true oestrus supervened. The skin lesions disappeared in five weeks and did not return, whilst oestrus recurred spontaneously seven months after treatment.

(*c*) *Eczema Accompanying Pseudo-pregnancy in Bitches.*—Four cases are described, each of which received local treatment for the lactation

and daily doses of 10,000 to 20,000 units of folliculin. Three were completely cured of both skin trouble and sexual dysfunction, the fourth being still under investigation.

(*d*) *Chronic Eczema in Bitches Without Apparent Sexual Dysfunction.*—Thirteen cases treated with large doses of folliculin as in group (*c*). In most cases the eczema disappeared, only to recur after some months, when further injections were necessary and seemed effective.

(*e*) *Eczema in Male Dogs.*—Five cases treated with folliculin with very inconclusive results.

The author concludes by recommending the treatment of eczema in bitches with female sex-hormones, especially where there may be a causal relationship between the eczema and sexual dysfunction.

A. R.

* * * * *

[Clinical Studies in Gastrophiliasis in the Horse. (Trans. title.) Natscheff, B. (1938.) *Tierärztl. Rundsch.* **44.** 6. 85-88.]

Dealing with gastrophiliasis, Natscheff records that a high percentage of horses in Bulgaria harbour bots and that these parasites frequently occur in older animals, from 12 to 15 years, as well as in younger horses. He mentions the chief characters, stressing particularly the distribution of the spiny armature of the posterior segments by which the larvae of the various species may be distinguished. Five species, *viz.*, *Gastrophilus equi*, *G. haemorrhoidalis*, *G. nasalis*, *G. pecorum* and *G. inermis*, are present in Bulgarian horses; they normally occur attached to the mucous membrane of the cardiac end of the stomach but may also be found in the digestive part even when present in small numbers. After discussing the relative frequency of occurrence of the different species, the author deals with the bionomics of the various larvae and shows that, when removed from their hosts, they are not only capable of active movement but can exist for several days under favourable conditions.

Bot larvae are very resistant to aqueous solutions but are more sensitive to volatile chemicals. The author records that carbon bisulphide kills them, *in vitro*, within four to seven, at most ten minutes. Benzol, however, is not constant in its effect on the different species or even on different specimens of the same species; thus, several larvae of *G. equi* died after ten minutes' exposure while others remained alive after an exposure of 20 minutes to benzol. Natscheff proceeds to show, from his own experiments, that the so-called oestrin, which has been isolated from bot larvae and particularly from *G. haemorrhoidalis*, has a strong haemolytic and toxic effect when injected into horses.

As regards diagnosis, the author stresses the point that rectal examination is of considerable importance but the eye test, recommended by van Es and Schalc, he finds useless. Attempts at treatment with various drugs were most successful with carbon bisulphide and "gastol" (a Bulgarian preparation); larvae in the rectum are, in the author's view, most easily removed by hand since enemata were unsuccessful. In conclusion, Natscheff considers that gastrophiliasis should be included in the list of dangerous parasitic diseases and should receive serious attention. He recommends treatment with carbon bisulphide as single doses of 20 to 25 c.c. or together with benzol (15 to 20 c.c. of each) by the stomach tube. J. N. O.

* * * * *

[Trembling in Young Pigs. Hindmarsh, W. L. (1937.) *Austral. Vet. J.* **13.** 6. 249-251.]

The author describes some cases of trembling in young pigs, and reviews a little of the literature upon this subject, but does not venture to do more than speculate as to the cause. An hereditary factor is believed by some French authorities to be the cause, and the disease in chickens has also been classed by some as hereditary. The pig condition is stated to be capable of being classed as a permanent tremor during motion, and in human beings this is said to occur (*a*) in disseminated sclerosis, (*b*) as hereditary tremor, (*c*) as toxic tremor (due to tea, coffee, alcohol, etc.). The porcine condition does not agree symptomatically with any of these three types and the author does not think it possible now to suggest the cause of the condition found in the pigs he examined. [A similar condition was described in two breeding sows in the *Veterinary Journal*, Vol. 92. No. 2. Feb., 1936. pp. 48-50. Brain and spinal cord of one animal revealed no abnormal lesions, and the hereditary factor was believed to account for the condition. Litters from the second case there described have since revealed no trace of the condition.] D. J. A.

* * * * *

[On the Active Immunisation against Tetanus and its Significance in Practice. Wolters, K. L., and Dehmel, H. (1938.) *Berl. tierärztl. Wschr.* 5. 61-63.]

Two 5 c.c. injections of alum-precipitated tetanus toxoid were given to 84 horses at an interval of three weeks. The antitoxin value of the serum in all except three cases lay between 0·02 to 20 AE units per c.c. serum three weeks after the first injection. With the same three exceptions the antitoxin values lay between 0·5 to 10 units seven to ten weeks after the second injection.

In eleven horses, two injections of 10 c.c. each were given at an interval of three-and-a-half months. The antitoxin values lay between 0·01

and 2 units before the second injection and rose to lie between 2 to 18 units seven weeks after the second injection.

The authors recommend the use of precipitated toxoid in practice. The second injection should not be given earlier than four weeks after the first. If a horse immunised in this way becomes infected a further 5 c.c. of toxoid should be given as rapid antitoxin production ensues. As treatment for infection in a non-immunised animal, simultaneous injection of 5 c.c. toxoid and antitoxin is suggested, followed in 14 days by 5 c.c. toxoid and a further 5 c.c. in three to four weeks. A. T. P.

* * * * *

[On the Surgical Treatment of Colic. Martin, J. (1938.) *Berl. tierärztl. Wschr.* 8. 111-112.]

After two days of unsuccessful treatment of a one-and-a-half year-old filly it was found by rectal examination under chloral hydrate narcosis that there was a hard swelling far forward in the medial line of the abdominal cavity.

A vaginal incision was made so that the operator could insert his hand into the abdominal cavity. The impacted mass was kneaded and gradually broken down after half an hour's work.

After-treatment consisted in liquid paraffin and sodii sulph. by stomach tube followed by an injection of caffein and sodii salicyl. The filly was kept on thin linseed mash for the next few days and made an uneventful recovery.

A. T. P.

ATTESTED BEEF HERDS

On the first of July, the amended Attested Herds Scheme came into operation. This makes certain modifications in the existing Schemes, but the chief change is that it will bring beef herds within its scope. This is done by providing, as an alternative to the milk bonus, a half-yearly payment of 10s. per head. These payments are restricted to six in all, bringing their duration into line with the payments already foreshadowed for milk.

In this connection, the *Farmer and Stockbreeder* observes: "There will be no question of dairy herds used for milk production adopting this alternative, as the milk bonus, even with moderate milkers, would work out at considerably more," and continues: "This development of the Attested Scheme is only part of the drive of the new Animal Health Department of the Ministry for the eradication of diseases, and tuberculosis, we were told, was the first to be tackled. There are already tuberculin tested herds of beef cattle, and this temporary inducement should encourage others to clean up their herds. It earns a bonus in addition to any that may be given, and the aim should be to have cattle from Land's End to John o' Groats that can mix together without any danger from one to others. A good response may be expected from owners of beef herds. There must be many that can earn the bonus with little trouble, and any trouble there may be will be repaid."

REPORT

Bihar, India

REPORT OF THE CIVIL VETERINARY DEPARTMENT FOR 1936-37 (P. B. RILEY)*

The province of Orissa was separated from Bihar at the beginning of the year and there was a rearrangement of the districts. The superior staff remained the same, *viz.*, a Director, a Deputy Director, two Assistant Directors and one Disease Investigation Officer.

The subordinate staff now numbers 135 instead of 162. At the College four professors, two lecturers and six subordinates are employed.

Disease.—There was an increase in the number of outbreaks of contagious disease and in the consequent mortality. Rinderpest and haemorrhagic septicaemia were particularly severe. Two districts suffered badly from foot and mouth disease but few deaths were recorded. A large number of inoculations were performed. Against rinderpest the "serum alone" and goat tissue virus methods were both used, the latter more largely. Protective treatment was also given against haemorrhagic septicaemia, anthrax and black-quarter.

On account of the transfer of Orissa there was a natural decrease in the number of hospitals and the itinerating staff employed in Bihar but the results so far as they are comparable, show satisfactory progress in the number of animals treated. Progress is reported in the construction and repair of veterinary hospitals damaged by the earthquake.

The Disease Investigation Officer made a systematic inquiry into the incidence of sterility and abortion in cattle, investigated an outbreak of equine encephalomyelitis and carried out various other investigations noted in the report.

Cattle Breeding.—A scheme for intensive cattle breeding in selected areas is under the consideration of Government. In the meantime the work of castrating scrub bulls is going ahead.

The herd at the Patna cattle breeding and dairy farm was increased in number but the financial working was not satisfactory. There was a reduced demand for milk. It is stated that steps will be taken to improve matters.

Bihar Veterinary College. — Changes in the staff are reported and the office of Principal has to be filled.

The number of students at the College was

*Superintendent, Government Printing, Bihar. Price Rs. 1-3-0, or High Commissioner for India, Aldwych, London, W.C.2.

The Veterinary Record

July 9th, 1938.

The R.S.P.C.A. and the Profession

THE duties to their patients of members of the veterinary profession result in the development of improved health, the removal of sickness and of its causes and in the relief of incurable suffering by terminating painlessly the tortured life. The saving of pain and the increase in contentment of domesticated animals owing to the professional skill of the veterinary surgeon is immense.

The R.S.P.C.A. has played a great and historic part in the alleviation of the sufferings of animals. The tremendous improvement in the methods of handling animals, which has occurred during the life of this Society, is due in no small measure to its activities both in Parliament and throughout the country, yet this improvement reflects only a small section of the Society's great work.

It would seem axiomatic that these two organisations, sharing as they do the same ideals for the improvement of animal welfare, would collaborate effectively with each other. That this is generally so was well shown by the speeches of Sir Robert Gower and Colonel P. J. Simpson at the R.C.V.S. Annual Luncheon. These two speeches were complementary in that the one expressed the thanks of the Society for the "very great assistance" which the profession affords to it at the present time in its humane work, and the other acknowledged in pleasantly handsome terms the great debt which the profession owes to the Society for its past help, particularly in connection with the passing of the Veterinary Surgeons' Bill, 1881. These two speeches should be read carefully by members of our profession, for they may help us to be even more generous to the Society in the future, when we remember the support we have received from it in the past.

At the moment the N.V.M.A. and its Divisions are engaged in the task of trying to improve the dual schemes for the treatment of animals of the poor. No doubt some suggestions for the amendment of the schemes will arise from these deliberations and then we may be certain the N.V.M.A. will submit them to the R.S.P.C.A. and the two bodies will together evolve a scheme in its final and best form. Nothing but good can result from this active reconsideration of the present schemes provided that both enquiries and suggestions are made in a true spirit of collaboration and genuine striving for improvement. As a reminder of the benefits to be derived from such collaboration, both to the animals and to the organisations concerned, were any reminder necessary, the speeches referred to above are apt and opportune.

RACECOURSE BETTING CONTROL BOARD GRANTS

In their ninth annual report and accounts for the year 1937, laid on the table in both Houses of Parliament by the Home Secretary on June 22nd, the Racecourse Betting Control Board show that from the working of the Board's totalisators on racecourses, after meeting all outgoings for the year, including interest, and after providing for taxation and setting aside £1,500 for charitable purposes, there was a surplus of £318,176, as compared with £292,581 in the previous year.

Of this surplus £150,000, as compared with £118,815 in 1936, has been devoted to grants for horse breeding, horse racing and veterinary science and education, as prescribed in the Acts of Parliament, and £168,176 has been used in the reduction of capital debt, including the redemption of stock. Grants for the improvement of the sport of horse racing include £54,128 for improvements in racecourses and the accommodation for the public, £44,976 for increase of stake money, and £16,500 to the racing authorities to assist them in their duties of control. £10,127 has been set aside to assist the owners of racehorses in regard to the cost of transporting horses to race meetings. The assistance to horse breeding includes an increased grant of £6,600 to the Hunters' Improvement and National Light Horse Breeding Society, £750 to the Shire Horse Society, and £300 to the National Pony Society, and assistance has been continued to the Clydesdale Horse Society.

Veterinary research into various diseases of horses has been assisted to the extent of £2,165, while £500 has been given to the building fund of the Royal Veterinary College and £1,000 to the building fund of the Royal (Dick) Veterinary College in Edinburgh, in addition to previous grants made to these two institutions. Grants of £500 in each case are also being made to the Glasgow Veterinary College and the Liverpool University School of Veterinary Science.

73, those from Bihar Province numbering 26. The examination results were satisfactory. A short course of post-graduate training was provided. Satisfactory work was carried out in the Research Laboratory of the College.

G. K. W.

REVIEWS

[**The Handling of Milk and Milk Products.** By A. T. R. Mattick, B.Sc., Ph.D., National Institute for Research in Dairying, University of Reading. Bulletin No. 31 of the Ministry of Agriculture and Fisheries. Published by His Majesty's Stationery Office. Price 2s. net.]

In the previous edition of this Bulletin considerable space was given to the basic observations of the National Institute for Research in Dairying in regard to clean milk products and clean milk competitions, and to problems connected with the production and distribution of graded milks. The essentials of clean milk production are again dealt with in this edition and are presented in an eminently readable manner, occupying some 20 pages. The greater part of this edition is taken up with other subjects on which the Institute staff has been engaged more recently; some of this material is unpublished elsewhere. The author's aim has been mainly to describe the work of the Institute but such reference is made to the work of others in the field as has been necessary to a proper presentation of the subjects dealt with.

Sections are included on the various problems connected with pasteurization (including high temperature short time pasteurization and thermophiles); questions connected with cheese-making; faults in milk products such as bitterness, ropiness and taints due to food-stuffs and faults in cheese and butter. Short chapters follow on the bacteria in milk and milk products and on the bacteriological examination of milk. Reference is made to bovine tuberculosis, sections being included on the relative value of routine microscopic examination of milk and the biological test, on the work of the viability of tubercle bacilli on pasture, etc., published elsewhere, and on the maintenance of tuberculin tested herds, figures being given to show the relatively low incidence of reactors in herds which rely on home-bred stock as compared with other herds. Finally, the effect of heat on the nutritive value of milk, of commercial pasteurization, and of seasonal variations of the vitamin content is discussed with particular reference to the considerable amount of work done on the subject at the Institute itself.

The bulletin contains a useful account of work on a variety of subjects in which it may be expected that our readers will be interested.

* * * * *

[**Calf Rearing.** Bulletin No. 10 of the Ministry of Agriculture and Fisheries. Published by His Majesty's Stationery Office. Price 6d. net.]

The fact that this small booklet was first published in 1930, has been reprinted four times and re-edited once speaks much for its popularity and usefulness.

As is stated in the foreword, the milk industry has seen great changes in very recent times which have tended to attract milk and dairy products away from the farm. This has had the not entirely desirable affect of necessitating the weaning of calves from the dam at the earliest possible moment and the substitution of dried milk products and special "calf mixtures." In connection with this aspect, advice is proffered and a variety of rations are laid down and discussed designed to economise in whole milk. At the same time more natural methods of rearing are not over-looked and variations are offered to suit the particular set of circumstances or type of husbandry practised on the farm.

There are sections on housing, treatment at birth, selection for special purposes and hints on management after six months, and since a booklet of this nature would be incomplete without it, a note on the rearing of calves free from tuberculosis.

To read this booklet will be, to many, as good as taking a refresher course on this subject.

BLOOD PLASMA IN PREPARATION OF FOODSTUFFS

The incorporation of blood plasma in various types of sausage has recently been carried out in Germany. According to a Government regulation of April 28th, 1938, blood plasma prepared by centrifugalisation of citrated blood from slaughtered animals may be employed in preparing sausages in a proportion not exceeding 10 per cent. The fibrinogen content of plasma renders it richer in protein than in the case of blood serum. Until fairly recently, defibrinated blood was used, but on July 6th, 1937, regulations were issued permitting the use in sausages of whole citrated blood. Technical difficulties in the use of whole blood render it impracticable for any except the largest abattoirs, whereas plasma is very readily incorported in sausages. It was estimated that only a relatively small part of the many million litres of blood available annually in German abattoirs is used for food purposes.

* * * * *

The veterinary laboratory of the Ministry of Agriculture at New Haw, Weybridge, are conducting investigations into obscure cases of blindness in calves which appears to develop at about four to six months old. Breed societies desire any data bearing on the matter, particularly in regard to cases of blindness affecting any particular family line, in order that the laboratory may conduct research into the cause of the trouble.

* * * * *

Grass sickness has taken a heavy toll of horses in Morayshire during the past few weeks, it being stated that the outbreak is the worst ever experienced.

ROYAL COLLEGE OF VETERINARY SURGEONS

NINETY-FIFTH ANNUAL GENERAL MEETING

STEEL MEMORIAL MEDAL PRESENTED TO MR. WOODS

The Ninety-fifth Annual General Meeting of the Royal College of Veterinary Surgeons was held at 10, Red Lion Square, London, W.C.1, on Thursday, June 2nd, 1938, at 12 noon.

Lieut.-Colonel P. J. Simpson, D.S.O., T.D., F.R.C.V.S., J.P., President, occupied the Chair and there were present: Captain B. H. Benson, Messrs. A. Blake, T. J. Bosworth, Lieut.-Colonel J. W. Brittlebank, Professor J. B. Buxton, Professor T. Dalling, Mr. H. M. M. Duff, Major G. W. Dunkin, Mr. R. E. Glover, Major W. H. Kirk, Messrs. G. H. Livesey, J. W. McIntosh, Major H. Mason, Lieut.-Colonel W. S. Mulvey, Captains J. W. Procter, R. Simpson, Mr. Arnold Spicer, Captain W. K. Townson, Colonel G. K. Walker, Messrs. J. L. Webb, W. Woods, Professor G. H. Wooldridge and Lieut.-Colonel T. Dunlop Young.

The SECRETARY read the notice convening the meeting.

The SECRETARY announced that apologies for inability to attend the meeting had been received from the following: Sir Frederick Hobday, Dr. Share-Jones, Mr. Coleman, Mr. Dolan, Mr. Holroyd, Major Mattinson, Mr. Nairn, Sir John Moore, Major Gooch and Mr. Jackson Young.

The SECRETARY read the minutes of the Ninety-fourth Annual General Meeting, held on June 3rd, 1937, which were confirmed and signed as correct.

Election of Council

The SECRETARY read the auditors' report on the election of the Council, which was dated May 30th, 1938, from Messrs. Wilkinson, Chater and Co., Chartered Accountants, of 28, Queen Street, London, E.C.4, and was as follows:—

> "We certify that we have checked the voting papers sent in for the annual election of ten members of the Council of the Royal College of Veterinary Surgeons, and the number of votes obtained by the 13 members nominated for the vacancies are set out below against their respective names:—
>
> | *Name* | *Votes* |
> |---|---|
> | Dalling, T. ... ... | 784 |
> | Dawes, H. W. ... ... | 776 |
> | Livesey, G. H. ... ... | 744 |
> | Walker, G. K. ... ... | 728 |
> | Mulvey, W. S. ... ... | 657 |
> | MacKenzie, A. ... | 628 |
> | Wilson, T. ... ... | 597 |
> | Brittlebank, J. W. ... | 591 |
> | Procter, J. W. ... ... | 572 |
> | Glover, R. E. ... ... | 555 |
> | Wooldridge, W. R. ... | 545 |
> | Coleman, J. C. ... ... | 540 |
> | Hare, T. ... ... | 491 |
>
> There were eleven spoilt papers.
> (*Signed*) WILKINSON, CHATER & CO."

The PRESIDENT: It is now my duty to declare that the eight members of Council elected to take the place of those retiring by rotation are Messrs. T. Dalling, H. W. Dawes, G. H. Livesey, G. K. Walker, W. S. Mulvey, A. MacKenzie, T. Wilson and J. W. Brittlebank. There are two additional vacancies caused by the retirement of Mr. J. Willett and the death of Dr. Bradley, whose terms of office expired respectively in 1940 and 1939. By the Charter of 1914 the vacancies caused other than by retirement are to be filled by those next on the list, the candidate having the higher number of votes being entitled to the vacancy having the longer time to run. I therefore declare that Mr. J. W. Procter is elected to take the place of Mr. Willett and Mr. R. E. Glover to take the place of Dr. Bradley.

The SECRETARY read the report of the Returning Officer, Irish Free State, which was as follows: "I have to inform you that Mr. A. A. Donnelly, of Drogheda, Co. Louth, was re-elected as general member of the Veterinary Council." This meant, the Secretary added, that Mr. Donnelly was to represent the Council of the Irish Free State on the Council of the Royal College of Veterinary Surgeons.

Annual Report and Financial Statement

On the motion of the PRESIDENT, seconded by Major KIRK, the annual report and financial statement was received.

The PRESIDENT: The report is now open for discussion. It has been circulated to all the members. Is is your wish that we should go through it page by page, or will you take it as read?

On the motion of Major KIRK, seconded by Lieut.-Colonel BRITTLEBANK, it was resolved that the annual report and financial statement be taken as read.

The PRESIDENT: It now requires to be adopted, and from the Chair I beg to move the adoption of the report and financial statement.

Lieut.-Colonel BRITTLEBANK seconded the motion, which was carried.

John Henry Steel Memorial Gold Medal

The PRESIDENT: It is now my privilege and pleasure to present on behalf of the Royal College the John Henry Steel Memorial Gold Medal to Mr. William Woods. (Loud applause.)

This medal commemorates a great veterinarian, the late John Henry Steel, F.R.C.V.S., who died in 1891, at the early age of 36. After spending nine months in the Army he was lecturer on anatomy at the Royal Veterinary College from 1875 to 1880, during which time he published his "Outline of Equine Anatomy," and was working at his "Diseases of the Ox." He was indeed an indefatigable worker. It was he who, with Mr. Banham, organised the first Veterinary Congress out of which the National Veterinary Medical Association arose. In 1881 he rejoined the Army and went to India. There, with his friend Fred Smith, he established the *Quarterly Journal of Veterinary Science in India*. He became Principal of the Bombay Veterinary College, but in his zeal he forgot the heavy toll he was taking of his physical powers. He was sent home after a few years shattered in health, but returned before he was fully recovered, and renewed his many duties. He was made a Fellow of the University of Bombay, with a seat on the Senate. He published his books on the *Diseases of the Dog*, the *Elephant*, the *Sheep* and the *Camel*. But he overtaxed his strength and the end came in 1891. Knowing that he was dying, he made superhuman efforts to complete the work in hand. He finished the Index to the last volume of the *Quarterly Journal*, issued a notice that his health would not admit of the work being continued, and died eight days afterwards. To commemorate his self-abnegation, his devotion to duty, his untiring zeal, his indomitable energy, and his constant striving for new knowledge, a fund was established to provide a special prize to be awarded by the Royal College of Veterinary Surgeons to benefit the profession by encouraging and rewarding merit.

I have thought it well to say this much about the man in whose memory the medal was struck, because I think it proper that whenever the medal is awarded, it should be made known what manner of man the medal commemorates.

I know that you will all agree with me that no more suitable recipient of the medal could be chosen than Mr. William Woods. (Applause.) Born in 1860, Mr. Woods graduated a member of the Royal College of Veterinary Surgeons, in April, 1881, and obtained his Fellowship exactly five years later—the earliest date then possible. Mr. Woods is "by heredity" a veterinary surgeon. He had followed in the footsteps of five generations, as his great-great-grandfather devoted his life to the art of doctoring animals, and this art has been carried on from father to son for nearly 200 years. Truly a wonderful record! I understand, however, that this succession is not likely to be carried on, as Mr. Wood's son has chosen another vocation.

To return to the attainments of the present representative of this great family, he was appointed an Examiner to the College in 1891, the year of his father's death and of Steel's death, and in the following year, when he was 31, he was elected President of the Lancashire Veterinary Medical Association. He was therefore a younger contemporary of Steel, and he was a co-Examiner with Steel's best friend, whom I have already mentioned, the late Sir Frederick Smith. To have been an Examiner for 47 years, as he has, constitutes a record that will never, I fancy, be broken. During that period he has also acted as Examiner for the Fellowship Diploma and for the Diploma in Veterinary State Medicine. Besides carrying on a successful veterinary practice, he has acted as a teacher of veterinary hygiene, dietetics, and of sanitary law at the University of Manchester (which recently honoured him by conferring on him the degree of Master of Science), and as an examiner for the Universities of Liverpool, London, Manchester and Reading. It is again of interest to note the heredity instinct in Mr. Woods, inasmuch as his father was an Examiner in Cattle Pathology and incidentally was a colleague on the Examining Board with my uncle, Sir Henry Simpson, who examined in Equine Pathology.

Mr. Woods has, like every intelligent member of the profession, been constant in his attendance at the meetings of the veterinary associations of which he was a member, and has served in the most important offices attached to these. He has been a tower of strength on the Council of the National Veterinary Benevolent and Mutual Defence Society, and a regular visitor at all veterinary congresses. He has indeed identified himself with his profession, and has consistently from the very beginning of his career endeavoured, as John Henry Steel did, to enhance its prestige, to add to its sum of knowledge, and, above all, to add lustre to it by the probity and gentlemanliness of his own personal conduct.

In complete confidence, therefore, that I am expressing the sentiments of the whole profession, I present this gold medal to Mr. Woods as a token of our recognition of his sterling worth, of our affection for him as a man and our gratitude to him for his long life of devoted service to the advancement of the profession. (Applause.)

In handing the medal, amid acclamation, to Mr. Woods, the President added: I am sure that I am presenting this medal to one of the worthiest recipients to whom it has ever been or ever will be awarded.

Mr. William Woods, M.Sc., F.R.C.V.S.: As some remarks have been made as to the length of my period as an Examiner, it brings back to my memory the first time that I acted as Examiner, at Christmas, 1890, when I acted as a substitute for an Examiner who could not

be present. It is of interest to mention that my colleagues at that examination were Sir Henry Simpson, the uncle, and Mr. James Simpson, the father, of the President. (Applause.)

I may say that I knew Mr. Henry Steel, though I did not know him very well; unfortunately he died young.

I have not words adequately to thank you for what has been done to me. I have been in considerable difficulty in persuading myself that I was worthy of this, but perhaps I do not depreciate the value of it to me if I mention that an Irish friend of mine met me last week and congratulated me on the award of this medal, and I said to him, "Well, I have a difficulty in justifying it in my own mind that I am sufficiently deserving of this unique honour," because it is unique in the year. His reply was, "Oh, you deserve it," so I asked him to explain why, and he replied, "You deserve a medal because you did not stop me in my exam." (Laughter.) I thought that I had better look round the Council and see how I had got on with them, and so far as I can recollect I have not stopped one of them. In the case of one of them, Professor Buxton, I also examined him for his Fellowship, and I remember feeling that it was a real piece of good luck that I had to examine him instead of his having to examine me, or the result might have been different! (Laughter.)

I look upon this as being an act of kindness. The friendship which I have received from my profession has been very great. This is not the only token that I have received; my friend Colonel Brittlebank could tell you of a very handsome present which I received on my resignation of the lectureship at the Manchester University, and even before then I have received other tokens of recognition. This is really a glorious climax to the termination of my official connection with the veterinary profession, and it touches me very much, so that I have difficulty in saying more. I will say this, however, that that friendship will remain engraved on my heart. Though it is said that it is a long road which has no end, there is never an end to the friendly road. (Applause.)

Fellowship Diploma

The President: I will now ask Mr. H. M. Duff, F.R.C.V.S., D.V.S.M., to receive the Diploma of Fellowship.

In presenting the diploma to Mr. Duff, the President said: I congratulate you on obtaining the Fellowship Diploma of the Royal College of Veterinary Surgeons. Perhaps I may add that we wish there were many more like you who would come forward and try, at any rate, to obtain this diploma. You will be among a comparatively select few of the profession who hold this diploma, and I again congratulate you. (Applause.)

Prizes.—The Secretary announced that the winners of the FitzWygram Prizes, the Williams Memorial Prize and the Walley Memorial Prize had sent letters of apology for being unable to attend the meeting that day.

The President: That concludes the business and I have to thank you very much for your attendance here to-day.

Professor J. B. Buxton moved a very hearty vote of thanks to the President for his conduct in the Chair.

The motion was seconded by Lieut.-Colonel Brittlebank and carried unanimously, with acclamation.

The President: Thank you very much indeed, gentlemen. As I said before, I thank you for coming to support me at this meeting, and I now vacate the Chair. The meeting of the Benevolent Fund will follow.

The Annual General Meeting then terminated, and the General Meeting of members of the Victoria Veterinary Benevolent Fund followed immediately.

* * * * *

R.C.V.S. ANNUAL LUNCHEON

Sir Robert Gower's Tribute to the Humane Work of the Veterinary Profession

THE PRESIDENT'S REVIEW

The annual luncheon of the Royal College of Veterinary Surgeons was held at the Connaught Rooms, London, W.C.2, on Thursday, June 2nd, 1938, the President, Lieut.-Colonel P. J. Simpson, D.S.O., T.D., F.R.C.V.S., J.P., occupying the Chair.

There were also present: Sir Donald Fergusson, K.C.B., Sir Robert Gower, K.C.V.O., O.B.E., M.P., Sir Ernest Graham-Little, M.P., R. Grant-Ferris, M.P., Dr. J. M. Hamill, O.B.E., Professor W. W. Jameson, Professor J. Graham Kerr, M.P., Captain Fergus MacCunn, Sir Arthur S. MacNalty, K.C.B., W. Woods, D. Campbell (President, N.V.M.A.).

Captain G. Atkinson, Mrs. Barron, N. S. Barron, A. Blake, T. J. Bosworth, M. Bray, Professor J. B. Buxton, Mrs. J. B. Buxton, H. E. Bywater, W. F. Barton, D. A. E. Cabot, T. G. Chamberlain, W. H. Chase, C.B.E., T. A. R. Chipperfield, J. C. Coleman, Professor T. Dalling, H. W. Dawes, Mrs. H. W. Dawes, Major G. W. Dunkin, Mrs. G. W. Dunkin, Dr. J. T. Edwards, Major A. N. Foster, O.B.E., I. A. Galloway, R. E. Glover, B. J. Hartley, M.B.E., Sir Frederick Hobday, C.M.G., E. J. Horder, Captain E. E. Jelbart, M.C., Mrs. H. King, Major Hamilton Kirk, G. H. Livesey, E. C. Lloyd, Mrs. E. C. Lloyd, Dr. R. Lovell, Professor J. McCunn, J. W. McIntosh, Major

H. Mason, O.B.E., Edgar Messervy, Dr. F. C. Minett, M.B.E., Colonel W. S. Mulvey, O.B.E., Mrs. W. S. Mulvey, J. W. Procter, H. S. Purchase, Colonel H. A. Reid, O.B.E., Charles Roberts, Mrs. C. Roberts, J. F. Simpson, F.R.C.S., Mrs. P. J. Simpson, Captain R. Simpson, Mrs. R. Simpson, Arnold Spicer, Dr. A. W. Stableforth, R. V. Thatcher, Captain W. K. Townson, Colonel G. K. Walker, C.I.E., O.B.E., Captain P. W. Walker, Professor G. H. Wooldridge, Mrs. G. H. Wooldridge, Dr. W. R. Wooldridge, Mrs. W. R. Wooldridge, Colonel T. D. Young, O.B.E., and Dr. Fred Bullock.

"The Royal College of Veterinary Surgeons"

The loyal toasts having been honoured, Sir Robert Gower, K.C.V.O., O.B.E., M.P., proposed the above toast in the following terms:—

I feel that it is not only a privilege but an honour to be permitted to propose this toast and to couple with it the name of your esteemed President, my friend Colonel Simpson. (Applause.) As you know, I have the privilege of being Chairman of the Royal Society for the Prevention of Cruelty to Animals. The most harmonious relationship exists between yourselves and the Society over which I have the honour to preside. The relationship between the veterinary profession and your College and the Royal Society for the Prevention of Cruelty to Animals is a very harmonious one, and I would like most sincerely to thank the members of the veterinary profession throughout the country for the very great assistance which they give to us in connection with our humane work.

The proper treatment of animal diseases is undoubtedly becoming more and more vital to the nation. Whilst surgeons can claim to treat disease, it is first necessary to diagnose it. I suppose that less is known by the public about animal maladies than about diseases affecting the human creation, but, as veterinary surgeons are no doubt aware, most people think that they know something about animal diseases, with the result that, speaking from the standpoint of the Royal Society for the Prevention of Cruelty to Animals, I have found that one of the greatest forms of cruelty to animals is the inadequate treatment which they receive from amateurs, well-intentioned, no doubt, but lacking the necessary knowledge. It is for that reason that the Royal Society for the Prevention of Cruelty to Animals has always preached the maximum use of the services of veterinary surgeons. It is for you, however, to promote research work to the best of your power.

There is another suggestion that I should like to make to you, and that is that veterinary surgeons are not sufficiently represented in Parliament. At the present time there are fewer doctors in the House than has been the case within living memory, and I doubt whether there is anyone in the House who knows anything whatever about veterinary science from the professional point of view; yet we have debate after debate on agricultural topics, and there are private Bills which deal with animals where the experience of the veterinary surgeon would be of the utmost value. It might be worth your while to consider whether you would not do well to secure a candidate; he might belong to any Party you like so long as his experience was available. Such a policy would raise your status, and this is equally necessary because I think that the average veterinary surgeon is paid on a very poor scale, and even so, there are many people who think that he is over-paid. There can be no doubt at all that the greater the prestige of the veterinary profession the greater will be the relief of suffering of animals in this country. Very frequently, when debates take place in the House of Commons on questions connected with animals, it occurs to me that had we more people there who were more familiar with the subject than are most of my colleagues, the legislation which is placed on the Statute Book would be considerably improved.

It is with very great pleasure that I have heard from my friend Sir Ernest Graham-Little that there is a proposal on foot that the Royal Veterinary College should very shortly become a part of the great University of London, thus bringing up its status to that of the medical colleges.

I have to couple with this toast the name of my friend, Colonel Simpson, the President of the Royal College. He has been a member of the Council of the Royal Society for the Prevention of Cruelty to Animals since October, 1932, joining that body when President of the National Veterinary Medical Association. Colonel Simpson has been the inspiration of the two great joint schemes for the benefit of poor people's animals now operating throughout England and Wales. He has gone to infinite trouble to create the necessary spirit of harmony and co-operation between the Society's officers and the local practitioners which has made these valuable schemes possible. No fewer than 288,519 cases received attention last year by the combined ministrations of the veterinary profession and the Royal Society for the Prevention of Cruelty to Animals. It gives me the greatest possible pleasure to submit this toast to you. (Applause.)

The President, who was received with applause on rising to respond, said: In the first place on behalf of the Royal College of Veterinary Surgeons I should like to thank you very much indeed, Sir Robert, for sparing the time to come to us and to propose this toast in

such felicitous terms. You have in a very short space of time referred to many things which if I again alluded to them individually would take up a considerable amount of time, but I should mention the great debt which the veterinary profession owes to the Royal Society for the Prevention of Cruelty to Animals. Memories are short and in most cases ignorance is rife. It may be news to the very great majority of people in this room when I say that in the year 1880 the veterinary profession was striving to have a Bill introduced in Parliament to establish their rights as a profession and to put them, so to speak, on their feet. Dr. Fleming was the leading veterinarian in this matter, and the first person he consulted to gain help was Lord Aberdare, then President of the Royal Society for the Prevention of Cruelty to Animals. Together they approached the President of the Privy Council, Earl Spencer, who promised to bring forward the Bill as a Government measure. After certain amendments the title of the Bill, which was originally introduced as the Veterinary Medical Bill, was changed to the Veterinary Surgeons' Bill. Lord Aberdare's name was on the back of that Bill, and he introduced it into the House of Lords. Several amendments were proposed which would have materially affected its standing and defeated many of its objects, and the Royal Society for the Prevention of Cruelty to Animals, among others, sent petitions to Parliament begging that the title of "veterinary surgeon" might be restricted to qualified men. Later on a certain amount of opposition was raised that that, and the Royal Society for the Prevention of Cruelty to Animals backed the Bill to this extent, that it telegraphed to every one of its branches throughout the country begging them to support the Bill. The result was that in the course of two days 197 petitions were lodged. In the words of Dr. Fleming, who was the original sponsor of this Bill, "It was only by a fortuitous combination of circumstances, by the good offices of the Royal Society for the Prevention of Cruelty to Animals, the Lord President of the Privy Council and one or two others, that the Bill passed." That is going back to fairly ancient history, but it shows what the Royal Society for the Prevention of Cruelty to Animals did for us in those days.

Coming to more recent times, most of us remember in the Great War what the Royal Society for the Prevention of Cruelty to Animals did in coming forward and giving financial and other aid to the Royal Army Veterinary Corps in the establishment of a hospital in France. Later on, they took it on themselves to equip and send to Abyssinia a veterinary unit known as the Silver Star Unit. That unit was commanded by a member of our profession, Colonel Stordy, but the war ended before this unit had had a chance to prove its great worth, as it would have done had hostilities continued.

Then we come to this scheme for the provision of veterinary treatment of sick animals of the poor which is in operation between the veterinary profession and the Royal Society for the Prevention of Cruelty to Animals. You all know it. We must face the facts, and we know that there is a small minority who disapprove of it, but we may say—and I speak with experience—that the scheme as a whole is going forward extraordinarily well, and the veterinary profession is giving of its best to help the scheme forward. (Applause.)

To come to an even later date and to show what a good friend we have in Sir Robert Gower, only recently a matter which was troubling us very much was the inclusion under the heading of "Veterinary Surgeons" in the Post Office Telephone Directory of the names of persons who had no qualifications whatever. I whispered into Sir Robert's ear about this and asked him whether he thought that anything could be done, not only for the sake of veterinary surgeons but in the cause of humanity, so that people should not think that amateurs were properly qualified veterinary surgeons. In a comparatively short space of time Sir Robert Gower took the matter in hand and the scrutiny of the Post Office Telephone Directory will be of a much severer type in future than it has been in the past, and we hope that such things as that will not occur again.

Sir Robert has referred to my being co-opted on to the Board of the Royal Society for the Prevention of Cruelty to Animals, a position which I value very highly indeed, and I think the profession as a whole values it inasmuch as they are represented on the Council of the Royal Society. Personally, as you know, I am a rather silent man—I will not say a strong silent man—and I do not feel it is my duty to interfere in the internal affairs of the Society, but my position on its Council has given me a great insight into the feeling on the Council with regard to the veterinary profession, and I am certain that the words that Sir Robert has said are not honeyed words merely for this occasion but are said sincerely.

I should like to read a very short extract from a journal called "The Veterinarian" and which appeared in its issue of June 1st, 1838, a hundred years ago. It is an extract from the proceedings of an annual general meeting of the Society for the Suppression of Cruelty to Animals, as it was then called: "The Society for the Suppression of Cruelty to Animals held its anniversary meeting on the 23rd. No fewer than four veterinary surgeons were present, thus testifying their approval of the grand principle on which it was founded. One of

them, expressing the sentiments of his brethren, asserted that there was or ought to be a kindred feeling between the veterinary surgeons and the members of such a Society. The practice and the reputation of the veterinary surgeon were built in the first place on science, but there was a broader, surer basis, humanity." That holds good as much to-day as it did a hundred years ago.

Turning to domestic matters, in my year of Presidency, there have occurred two outstanding events which will, to my mind, make the year memorable in veterinary history. The first is the opening of the new building of the Royal Veterinary College in Camden Town by His Majesty the King. The London College may now justly claim to be the biggest and best equipped veterinary college in the world. The keen interest shown by His Majesty and other members of the Royal Family in the progress of veterinary education is a most welcome encouragement.

The second great event in the year is the establishment by the Government of a State Veterinary Service charged with the duty of the elimination of disease amongst cattle, and primarily, of course, starting by dealing with that awful scourge, tuberculosis. This is an epoch-making event which will have a far-reaching influence on the future of veterinary practice. It was inevitable that the introduction of so momentous a change should press hardly upon a few members. To them we owe at least our sympathy. They may feel at the moment that they have been ruthlessly sacrificed, but I for one hope, however, that the disturbance of their practice will be found to be temporary, and that very soon they will be able to adjust themselves to the new circumstances and be as prosperous as before. In any event, the recognition by the State of the fundamental importance of the preventive side of veterinary medicine cannot fail to enhance the prestige of the profession and to increase the amount of veterinary work to be done, and for that reason alone I look forward with optimism to the future.

The year is also memorable for the Government inquiry into veterinary education, which is being carried out by a Departmental Committee. The committee appear to have gone very thoroughly into the task set before it and to have made an exhaustive examination of the problem. Representatives of the Royal College of Veterinary Surgeons have appeared before the committee on several occasions, and have given every assistance within their power to the committee by furnishing them with information with regard to the present state of veterinary education by answering questions and by the discussion of tentative proposals put forward.

We look forward with keen interest to the publication of the report in the near future.

One question of vital importance to the Royal College of Veterinary Surgeons was raised during the investigation, namely the maintenance of the one-portal system of entering the profession. The representatives of the College have given what we hope will be considered excellent and unanswerable reasons for the retention of the one-portal system. In the meantime, other investigations into veterinary education have been instituted by the College itself. About twelve months ago the first cycle of the five-year course ended. It now takes five years to go through the College and obtain a diploma, provided there are no falls. Like all new things, there have been small flaws discovered here and there however well thought out it may have been, and the Council of the College have under thorough review every aspect of this five-year course, and they may themselves in the near future put forward a new syllabus slightly altering the arrangement of the subjects for examination and trying to evolve a plan which will be fair to the students and which will be easy to carry out for the teaching institutions, and which at the same time will be capable of being dealt with in the examinations by the Royal College of Veterinary Surgeons.

The Council have also been giving careful consideration to the advances recently made by Cambridge University. The University is putting forward a scheme whereby those undergraduates who have attended the necessary lectures and passed the examination in the natural sciences tripos may be excused at any rate two years' work of our Course. There is at the moment a little debate going on about the third year. The point to which I am coming, and the part that I wish to emphasise is this, that those undergraduates will, on the completion of a certain amount of time at the university, proceed to one or other of the affiliated veterinary colleges in England, Scotland, Ireland, or wherever it may be, and study there the essential veterinary subjects which the universities admit that they are not in such a good position to teach as the old-established veterinary teaching colleges. The students will graduate as from those colleges, and then return to Cambridge University for another year's study to take up a post-graduate veterinary diploma. Sir Robert has referred to the need for research and this is a move which may obtain for us more research workers into the diseases of animals.

At the annual meeting this morning the Council presented a report showing that in 1937 no fewer than 1,393 students were examined, the highest number ever recorded, and more than three times as many as ten years ago. It is clear, therefore, that the five veterinary col-

leges which are already in existence are amply sufficient to supply the country with all the qualified veterinary surgeons who are needed for the work to be done. One hundred and fifty new graduates were admitted to the Register in 1937, and this number will increase considerably during the next four years. The number of deaths recorded during the past year was 92, so that we anticipate that there will be added to the Register each year at least 60 members surplus to the number required to fill the vacancies caused by death. In the course of a few years, at that rate of increase the veterinary profession may tend to become overcrowded rather than otherwise. Not only does the number of students at present in attendance at the five veterinary colleges exceed all previous records, but there are waiting lists for next year, and also for the year after next.

You must not think that those are all the activities in which your Council have been occupied during the past twelve months; there are many other things to which I could refer, but time does not permit. Perhaps it may not be known that we have acquired the freehold premises next door to our own freehold premises at No. 10, Red Lion Square, namely at No. 9. With that acquisition we hope to have a building capable of meeting the requirements of our Council and that will at any rate not be a disgrace to the veterinary profession.

I thank you very much indeed, Sir, for the way in which you have proposed this toast, and I can only say that I know from personal experience that what you have said has been true and sincere. I thank you also, ladies and gentlemen, for having received this toast so cordially. (Applause.)

"The Guests"

Mr. H. W. Dawes, M.R.C.V.S., who proposed the toast of "The Guests," said: It gives me very great pleasure to propose this toast, and it seems to me that perhaps to-day is one of those days when a luncheon of this character is necessary to revive those drooping spirits who are still suffering from the reverses of yesterday. (Laughter.) There is no doubt that the powers that be in selecting this date had some idea of making reparation for the disastrous results of the Derby! To those of our guests who were lucky we offer our congratulations, and so far as those who were unfortunate are concerned, I can only say that we have provided them with what I hope has been an enjoyable lunch.

At such a time as this, it is the privilege of the Royal College of Veterinary Surgeons to extend their hospitality to distinguished members in public life and in other professions, and all of you will agree that to-day is no exception to the rule. Among our list of guests we have a large number of gentlemen whose names are particularly illustrious not only in connection with their own professional calling but also with regard to the interest which they take in public affairs generally.

I am particularly pleased to see a very fine representation of members of the House of Commons, because we have four of them with us to-day. I know that I am expressing the opinion of you all when I say that at some time in the very near future I sincerely trust that we shall have a member of our own profession to represent our interests in the House. If we could have a representative of the calibre of Sir Ernest Graham-Little or Professor J. G. Kerr, I feel certain that our interests would be well looked after. We have been to some extent the Cinderella of the professions, and I venture to say that perhaps some of our slow progress has been due to the fact which Sir Robert Gower pointed out very clearly, that so many people, particularly in public walks of life, have very little idea of the aims and objects of the veterinary profession. We look forward to the time, therefore, when we shall have one of our own members in the House of Commons.

Of our guests, there is only time for me to refer to one or two. I should like to welcome, on behalf of the Royal College, Sir Arthur MacNalty. (Applause.) He is Chief Medical Officer of the Ministry of Health, and I am sure is one of those men who are cognisant of the needs and requirements of our profession. I should also like to mention Professor Jameson, whose position in the London School of Hygiene and Tropical Medicine has brought him very near to our profession.

There is one member of our profession whom I should like to take this opportunity of mentioning; I should like to take the opportunity of referring to the presence of Mr. William Woods. (Applause.) Mr. William Woods has been the recipient this morning of the John Henry Steel Memorial Medal, and when that medal was presented to him not only were we proud to give it to him, but it carried with it the good wishes of an enormous number of members of the veterinary profession—old, middle-aged and young. (Applause.) I am particularly glad to pay this tribute to him; he has been a friend of mine for almost as long as I can remember.

I do not think that speeches in the middle of the day should be long, but I am asked to couple this toast with the names of two of our guests. The first is Mr. Grant-Ferris. (Applause.) Mr. Grant-Ferris is in a very enviable position to-day, because, as many of you know, he has been absorbed into the veterinary profession by the process of marriage. I think that he will always give his very earnest

consideration to any matters closely connected with the veterinary profession. He is also very well known in the district from which I have the privilege to come; in Birmingham he has distinguished himself, and I venture to say that he will continue to do so in the constituency in London which he now represents. I am also asked to couple with this toast the name of Sir Donald Fergusson. (Applause.) I should like to take this opportunity of expressing the thanks of our profession to Sir Donald, because in the delicate negotiations which have taken place leading to the establishment of the new State Veterinary Service I feel that he has played no inconsiderable part, and his kindly offices have helped to smoothe the way and make much more comfortable the approach to the establishment of that Service which we all hope is going to do a great deal for animal health in this country. I think that it is particularly appropriate to-day that we have this opportunity on behalf of the Royal College of extending to Sir Donald Fergusson our appreciation of his efforts.

Lastly, it would ill-become me if as representing the Royal College I did not offer our thanks for their presence to the ladies. (Applause.) There was a time in the past when these functions were almost incredibly boring because they were usually a purely male affair, littered with "shop" from beginning to end. Whoever was responsible for the introduction of ladies at the annual luncheon of the Royal College deserves a vote of thanks from us all, because they have brightened up the proceedings considerably and we are all charmed to have them with us.

Mr. R. Grant-Ferris, M.P., who responded, said: I thank you, Sir, and the members of the veterinary profession who have invited me to this most excellent lunch. I enjoy being asked to a lunch at any time, because I always know that I can go back to the House and sleep through the questions until tea-time. (Laughter.) Mr. Dawes has referred to the fact that I married the daughter of a veterinary surgeon, and indeed I almost feel that I am your first representative in Parliament, because my father-in-law, who is probably well known to all of you, Major DeVine, has made sure that I know as much about the profession as it is possible to get into anybody's head without his actually being a member of it. I am very happy at any time to give any assistance that I can render to your profession in the House of Commons. I remember that I had the honour of proposing one or two amendments for the profession earlier this session, and I think that that was the first occasion on which I took any active part in legislation in the House at all, so that I shall always remember that occasion and its connection with your profession.

I was delighted to see here this morning your very dear friend and an old friend of mine, Mr. Woods. (Applause.) Mr. Woods was kinder to me than you can imagine, because nearly three years ago I went to a place in the North of England called Wigan, which is Mr. Wood's own town—and Mr. Woods will confirm the fact that there is a pier there and that there is no more tripe eaten there than anywhere else. (Laughter.) I went there in 1935 as a prospective candidate for Parliament and, as anyone can see by looking up the records, I was beaten by a large and enthusiastic majority of 10,000. (Laughter.) However, I had one friend there on whom I could count and who would have voted half a dozen times if he could, and probably did vote for me at least twice, and that was Mr. Woods. He will not mind if I tell you a little story about Wigan. At one of my meetings I had as Chairman a miner—I believe he was the only Conservative miner in Wigan. It was in a mining part of the constituency, and he was having the utmost difficulty in keeping order. He was struggling to do so when I arrived, and when he saw me coming in the door he said, "Well, lads, if you won't listen to common sense and reason I am going to ask Grant-Ferris to speak." (Laughter.) Things went a good deal better after that! (Laughter.)

I think that we should all desire to wish good luck and every sucess to Mr. Cabot, who has to-day started his duties as Chief Veterinary Officer of the Ministry of Agriculture. (Applause.) I have not yet had the pleasure of making his acquaintence, but I hope to get to know him well in the future, and I hope to see a good deal of him when I am Secretary of State for Agriculture. (Laughter.) I am sure we all wish him the best of success in his new office. (Applause.)

In conclusion, I am delighted to hear of the success of the profession during the past year, and we are all glad to know that your new building is going well. The only thing wrong with it is its position; if it were another hundred yards further north it would be in my constituency. However, it is in the borough which I have the honour to represent in Parliament. (Applause.)

Sir Donald Fergusson, K.C.B., who also responded, said: Mr. Dawes at the beginning of his speech in which he so kindly proposed the health of the guests referred to the fact that horses do not always behave as they should. I feel that at this hour the best way in which a guest can behave is to finish the course as soon as possible (laughter), but I should like to say that it is a particular pleasure to anyone connected with the Ministry of Agriculture to have the opportunity of being present at your annual luncheon, at the conclusion of your year

of office, Mr. President, which has been a year of such great development in everything connected with the veterinary profession. After the activities of the Ministry of Agriculture during the last year, I feel almost a member of your profession myself—not, of course, a properly qualified member, but what in another profession is called a lay assistant, with the humble bottle-washing, but I hope useful, function of endeavouring to assist in the sphere of Bills and Orders and finance to enable the real work of the veterinary profession to be done more comprehensively, and to facilitate at any rate the progress of veterinary science and of the veterinary profession.

The centralisation of the public veterinary service marks a very radical change in the attitude of the State towards animal disease. In the past the main function of the State Veterinary Service has been to deal with outbreaks of disease. The change which has come about is typified by the new style of the appropriate division of the Ministry, which has been changed from "Diseases of Animals Division" to "Animal Health Division." In future the work will comprise prevention and eradication of disease. It is a task of very great magnitude and of very vital importance to British agriculture. I am sure that the inauguration of this State Veterinary Service will be a landmark in the history of British agriculture and I believe also a valuable landmark in the history of the veterinary profession in this country. I very strongly believe that it will give the veterinary profession greater opportunities than they ever had before of showing what can be done by co-ordinated effort. It has alway sought such an opportunity, and is is well qualified to make the best of it and to prove to the country what its knowledge and science and experience can do if given a proper opportunity.

We all know the difficulties of dealing with disease, human and animal. One of the difficulties was brought home to me the other day when I heard of the answer which a candidate for a post in the Ministry's service gave to an inquiry before the Selection Board. He was asked, "What is the chief problem in your district with which you have been confronted?", and he replied, "Getting in the money." (Laughter.) That is a problem with which all professions are faced, but any profession dealing with health is also faced with ignorance, prejudice and the ineradicable human weakness for quack remedies, whether for human ailments or for the ailments of animals.

I think, however, that the veterinary profession has certain very great advantages. It is easier to control the movement of animals and the breeding of animals than it is in the case of human beings, and also we can adopt a slaughter policy when necessary. (Laughter.) How the doctors must envy the veterinary profession! (Laughter.) For these and other reasons I believe that it is very much easier to make a co-ordinated attack upon animal diseases than upon human diseases. For that purpose it will be necessary to have the co-operation of all sections of the veterinary profession—the teaching section, the research section, the State Service and the private veterinary practitioner. As an outsider, I think that it is very desirable to ensure that a young man entering your profession shall be able to choose without too much sacrifice the particular sphere for which his particular aptitudes render him most suitable. We hope to have the very closest co-operation between the officers of the State Service and the general practitioners. The help of the practitioners will be needed on a very large scale in our disease-eradication campaign, and 900 practitioners are on the panels appointed by the Ministry to assist in this work. What we also hope, and what is of perhaps even wider significance, is that the inauguration of this wider State Veterinary Service will bring home to farmers in an increasing degree the importance of eliminating disease from their herds and their stock, and the vital importance from their own economic point of view of improving the health and well-being of their stock, and for this purpose the necessity of using the science, skill and knowledge which the veterinary practitioner can give them. I feel sure myself that the activities of the State Veterinary Service will lead to a much wider use of the general services of the veterinary profession, and we thus hope to see an extension of the application of veterinary science and the activity of the veterinary profession in the interests of the health of the livestock of British agriculture over a far wider field than that covered by the Ministry's particular campaign.

I sometimes wonder what it is that leads to the prestige of any profession in the minds of the public. Any profession, of course, must mean something more than merely a way of making a living. The greatness of a profession depends partly, no doubt, on the outstanding men that it throws up from time to time, whether teachers, discoverers of new knowledge and new science, or those who can inspire students and young men just entering the profession with a real enthusiasm for their job and for knowledge; but in the main I think that it must depend on the impression given to the general public of the service rendered by the profession as a whole. I believe that the veterinary profession has a great future before it and opportunities such as it has not had in the past, and as a guest I should like to conclude by wishing it every success and prosperity in the future.

N.V.M.A. DIVISIONAL REPORT

Central Veterinary Society

The paper by Mr. W. P. Blount on "Some Recent Advances in Veterinary Physiology and Their Practical Application" attracted a crowded attendance to the meeting of the Central Veterinary Society held at the offices of the N.V.M.A., 36 Gordon Square, W.C.1, on May 5th, 1938, when virtually the whole evening was devoted to its discussion, the openers being Mr. A. T. Phillipson, Mr. E. G. White, Mr. C. W. Ottaway and Dr. H. Rosenberg.

The President (Professor J. McCunn) occupied the chair, and there were also present: Messrs. L. S. Balls, J. Bell, W. P. Blount, W. Brown, H. E. Bywater (Hon. Secretary), Professor T. Dalling, Messrs. J. J. Davies, W. Downing, H. Scott Dunn, Miss C. M. Ford, Mr. C. Formston, Lt.-Col. H. Greenfield, Mr. H. D. Jones, Dr. Tom Hare, Miss K. Hernaman-Johnson, Sir F. T. G. Hobday, Mr. J. W. H. Holmes, Major Hamilton Kirk, Lt.-Col. G. P. Knott, Mr. A. B. McIntyre, Captain G. Dunlop Martin, Mr. J. W. McIntosh, Professor Wm. C. Miller, Dr. R. F. Montgomerie, Colonel W. S. Mulvey, Messrs. C. W. Ottaway, W. Perryman, C. R. A. Powell, Miss K. Sanderson, Messrs. N. J. Scorgie, J. S. Steward, P. W. Walker, E. G. White, J. Willett, Major G. Williamson, Professor G. H. Wooldridge, Dr. W. R. Wooldridge and Professor J. G. Wright (Fellows); Mr. G. S. Allen, Miss D. V. Balls, Messrs. J. Berger, M. L. Bingham, Miss J. Francis, Miss M. Fussell, Messrs. J. B. Edwards, M. G. Hignett, S. L. Hignett, Miss D. Howell, Miss C. V. James, Miss J. O. Joshua, Messrs. P. A. Matthews, H. B. Perry, A. T. Phillipson, S. E. Piercey, Dr. H. Rosenberg, Miss G. H. Saunders, Miss R. R. Silverman, Miss J. P. W. Smith, Colonel R. J. Stordy, Messrs. J. W. Whittick, F. W. Withers and A. N. Worden (visitors).

Consideration of the minutes of the previous meeting was deferred pending their publication in the *Veterinary Record*, but those of the March meeting, which had received insertion, were taken as read, confirmed and signed.

Correspondence. — (1) From Mr. A. H. Andrew, Messrs. H. C. P. and Nevill King and Major-General Sir John Moore, apologising for their inability to attend the meeting.

(2) From Captain P. J. Turner of Bromley, intimating that as he was moving to Bournemouth he desired to submit his resignation from the Society. Captain Turner's resignation was accepted with regret on the proposition of Mr. Jones, seconded by Mr. McIntosh.

(3) From the Secretary of the N.V.M.A., suggesting that the Society should establish a "refresher" course in poultry husbandry and in poultry disease.

The President said that this letter had been considered by the Council of the Society, who made the following recommendation to the meeting, which of course it was open to the Fellows to accept or reject. The resolution was as follows:—

> "That the Central Veterinary Society is in favour of a course being held in poultry husbandry and disease control, and recommends that a sub-committee consisting of the President, Professors Dalling and Miller, Mr. Blount and the Hon. Secretary be appointed to consider the matter and report."

The resolution was carried unanimously.

Obituary.—The President observed that before they passed to the next item on the agenda he had to inform the Fellows, with much regret, that since their last meeting they had lost by death Mr. D. E. Wilkinson, who until recently was a Fellow of the Society. Mr. Wilkinson, proceeded the President, had not been in membership with them for long; for many years, as they knew, he was an unqualified man; he qualified late in life, and he thought it was a wonderful thing for him to go to the Veterinary College at the time he did and qualify. (Hear, hear.) He had given one paper to the Society, which was much appreciated, and until he was attacked with bronchial trouble he was a fairly frequent attender.

The meeting stood in silence in Mr. Wilkinson's memory.

Election to Fellowship.—Brigadier C. A. Murray, Director-General R.A.V.C., who had been proposed by Sir Frederick Hobday, seconded by the President, was unanimously elected a Fellow.

Representatives to the Council, N.V.M.A.—The following were elected in this capacity: The President, Mr. Balls, Professor Dalling, Dr. Tom Hare, Sir Frederick Hobday, Major Kirk, Professor Miller, together with the Hon. Secretary *ex officio*.

Morbid Specimens and Subjects of Professional Interest

Dr. R. F. Montgomerie said he would like to take the opportunity to place before the meeting a matter which really was following up an item in the proceedings of their last meeting. The Fellows would remember that on that occasion they had a very excellent address on contagious abortion from Dr. McEwen. In his reply Dr. McEwen had pointed out that one of the great difficulties in doing any further work on one very important phase of the problem with which he was dealing, namely, the

use of attenuated living culture of *Brucella abortus* as a means of controlling abortion, was the fact that the Ministry of Health in the Milk (Special Designations) Order laid it down that a living vaccine might not be used in herds which were accepted as producers of "tuberculin tested" milk.

Dr. McEwen stressed the fact that there were good grounds for very extensive investigation on the value of the attenuated living culture vaccination. It was in his (Dr. Montgomerie's) own experience that there were difficulties arising as a result of that rule. He knew that at least one Branch of the National Farmers' Union intended to pass a resolution which would go forward to the Ministry of Health suggesting that the attenuated living vaccine should be permitted in these herds. He would suggest, therefore, that that Society, if the proposition he was about to put was sound, should get ahead of the National Farmers' Union.

The matter was serious from another angle altogether. To-day calfhood vaccination with living culture as a means of controlling contagious abortion was being widely put into practice in the United States of America, and such information as they had in this country suggested that it was worthy of further trial. But as he had said, that trial could not at present be attempted in herds which were licensed as "tuberculin tested."

He would make a further point that many members of the profession used the Ministry of Agriculture live vaccine in the control of contagious abortion in badly affected herds, but owing to the ban on its use in "tuberculin tested" herds they were prevented from adopting what they believed to be the most sound method. In view of these circumstances, and after consultation with the Secretary, he had drafted the following resolution:—

> "That the Central Veterinary Society, appreciating that in some herds no method of contagious abortion control other than vaccination with living vaccine is practicable and believing that such vaccination will not increase the risk of milk contamination in badly infected herds, suggests that the N.V.M.A. approach the Ministry of Health with a view to having Sub-section C of Part 1 of the 3rd Schedule of the Milk (Special Designations) Order of 1936 amended so that owners of "tuberculin tested" herds may use this vaccination method for the control of the disease. The Society would further point out that the operation of this Subsection makes it impossible to use these herds for experimental work on the value of vaccination in the control of contagious abortion."

Continuing, Dr. Montgomerie said he had been in touch with Dr. McEwen in this matter, and the latter had agreed that it was quite a suitable resolution—Dr. McEwen had asked him to say that, in view of the fact that the matter was being brought up at that meeting, he was particularly sorry that he was unable to be present. Dr. McEwen had made one point in regard to the resolution; he would rather it was worded to suggest that living non-virulent vaccines be allowed. However, he put forward the resolution as it stood, to meet his own view, namely, that it should refer simply to living vaccine, because he believed living vaccines would have to be used in any trials of calfhood vaccination. His second reason for not qualifying the term living vaccine was that he thought it should be open to the profession to choose what was a recognised method of controlling contagious abortion, *i.e.*, the use of living abortion vaccines, in "tuberculin tested" herds.

Mr. Steward seconded the resolution.

Professor Wooldridge said that the matter was of course sprung on them, and he felt that it deserved further consideration than they could give to it that evening. He would point out to the meeting that, while the opinions expressed by Dr. Montgomerie were very sound up to a certain point, he had not gone the whole way. The dangers of the use of virulent vaccines had been appreciated both in this country and abroad. At the World's Dairy Congress in Berlin last year, which he attended, there was a consensus of opinion on the part of all the authorities engaged on the problem, with one exception, that the use of living vaccines should be prohibited. That exception was Professor Veenbaas of the Netherlands, who suggested that live vaccines might be used for the immunisation of calves. If Dr. Montgomerie would modify his resolution in such a way as to suggest that the use of live vaccines should be limited to calves under a certain age, he thought it would have a far greater probability of being considered favourably than as it was worded at present.

Mr. J. Willett proposed that this matter be placed on the agenda for consideration at the next meeting, adding that in the meantime the Fellows would have had an opportunity of reading in the *Record* Dr. Montgomerie's proposition and his observations in support, and they would therefore be in a better position to give a decision.

After further discussion, however, the resolution was put to the meeting by the President, who declared it lost by a large majority.

Captain Dunlop Martin exhibited what he felt the Fellows would agree with him was a rather interesting cystic growth he removed from a retriever bitch a fortnight previously.

It was about the size of a large orange and it was situated level with the anterior border of the pubic symphisis and two inches in front of the vulva. He thought it was solid, and it was only on sectioning it after removal that he found it to be cystic. The growth contained three ounces of dark yellow fluid, which reminded him of nothing so much as the urine of a very virile male cat.

Mr. L. S. Balls informed the meeting that he recently met with a six-months-old dog without any fore-legs, the puppy of a mongrel terrier. A right shoulder blade was there, and there was a small piece of bone on that side about one inch long. The dog walked along on its hind legs and there was no question of cruelty involved in keeping it alive.

Paper.—The President now called upon Mr. Blount to present his paper, "Some Recent Advances in Veterinary Physiology and Their Clinical Application." This was heard with much interest and appreciation and was discussed for the remainder of the evening, the essayist making a summarised reply, it being understood that he would make full response when the paper and discussion appeared in the *Veterinary Record.* [This material is inserted at the commencement of this issue.—*Editor.*]

Mr. Blount also exhibited a few lantern slides in illustration of this paper.

Vote of Thanks.—At the conclusion of Mr. Blount's reply, the President rose to propose a hearty vote of thanks to him and to the openers of the discussion, which was accorded with acclamation.

Place of Future Meetings.—The President now called attention to the fact that the meeting had been called at the headquarters of the N.V.M.A. to test the suitability of that room for the meetings of the Society. He therefore wished to ascertain whether it was desired that the Society should continue to meet there.

It was unanimously resolved that the Society should not meet in future at 36 Gordon Square.

H. E. Bywater, *Hon. Secretary.*

The *Scottish Farmer* reports the death of Oakham Dainty, record-breaking British Friesian and twice champion at the London Dairy Show, the animal being found dead in her stall by her owner, Mr. Cecil Ball, Oakham, Rutland. She was eleven years old last April, and was the first cow whose performances were broadcast. She broke all records at the London Dairy Show in 1932, gaining the highest number of points ever recorded by any cow at any show. In 1937 Oakham Dainty was in the news again, having yielded a total of 8,298 gallons since 1930; she produced during that year 2,003 gallons in 309 days.

In Parliament

Introduction of Permanent Milk Policy Proposals Postponed

In the course of a recent announcement in the House of Commons relative to the above, Mr. Morrison said: "I regret that owing to the pressure on Parliamentary time it will not now be possible for legislation to give effect to the Government's proposals contained in the White Paper on Milk Policy issued in July, 1937, to be introduced and considered this Session. The Government hopes, however, to introduce such legislation early next Session and, as an interim measure, proposes to ask Parliament to pass before the Summer Recess a Bill to extend the chief provisions of the Milk Acts, 1934 to 1937, for a further twelve months until September 30th, 1939, and, as proposed in paragraph 8 of the White Paper, to release the Milk Marketing Boards from liability accruing after September 30th last to repay to the Exchequer the advances made under the Milk Acts in respect of manufacturing milk.

"An extension of Section II of the 1934 Act will enable Exchequer contributions to be made towards the cost of the schemes referred to in paragraphs 20 and 21 of the White Paper, namely cheap milk for school children and for expectant and nursing mothers and children under school age, and in order to facilitate the development of those schemes the Government proposes to ask Parliament to provide an additional £750,000 instead of the £500,000 hitherto made available annually."

. . . . .

Mr. Morrison, moving the second reading of the Milk (Extension and Amendment) Bill, referred to above, in the House on Monday last, said that the Government hoped to introduce legislation early next Session to give effect to the comprehensive policy described in the White Paper. It was necessary to retain the present system of assistance to the milk industry for another twelve months, and Clause 1 of the Bill did that. Clause 2 proposed to extend for twelve months the period in respect of which Exchequer grants could be made to the Milk Marketing Board towards expenses in giving effect to improved schemes for increasing the demand for milk.

The best of these was the milk-in-schools scheme. It was estimated that before the scheme began about 900,000 children were receiving milk in schools under arrangements made by the National Milk Publicity Council. That figure later increased to 2,000,000, and it was now estimated that about 2,750,000 children were participating. Over 23,000,000 gallons of milk were consumed under the scheme in England and Wales in the year ended last September, and it was likely that the next twelve months would involve the consumption of 25,000,000 gallons. The scheme had undoubtedly proved its merits.

It was hoped to introduce in the autumn a scheme on the lines foreshadowed in the White Paper under which the local authorities would be able to secure milk at a reduced price for their maternity and child welfare arrangements. Local authorities would thus be in a position to extend their present schemes and to make milk available to expectant and nursing mothers and to children under school age either free or at reduced prices. In the meantime the Bill

proposed that for those purposes the limit of the total Exchequer grant available should be increased by £250,000 to £750,000.

The Quality Scheme

The Government were unwilling to include in the short-term measure provisions enabling Exchequer assistance to be given towards the payment of increased premiums on quality milk as that would involve anticipating one part only of a balanced policy. If the Milk Marketing Board should decide as from October 1st next to pay increased premiums and allow increased rebates on quality milks on scales approved by the Minister and the proposals foreshadowed in the White Paper, the Government would be willing to commend to Parliament provisions authorising certain retrospective assistance to the Board.

Mr. T. Williams said that every effort should be made to bring about a reduction in the price of milk and there should be a rational distribution scheme.

Brigadier-General H. Clifton Brown said that he approved the extension but regretted that the main Bill had not yet come before the House.

Mr. Hopkin observed that there was a gap between the producer and the consumer which should be bridged. The quality premiums would be received by farmers with joy and gratitude.

Mr. Taylor said that there was a large body of medical opinion, which had forcibly expressed its views in *The Times*, in favour of pasteurization, but there had been no observations by the Government on that subject. Many people would not drink milk because they felt that the milk supplied by many distributors was unsafe.

Mr. Ridley commented that the non-production of the major Bill was a grave disappointment to every one interested in the problem of nutrition.

. . . . .

The Rothschild Bequest

The British Museum Bill was read a second time in the House of Lords on Tuesday last. Lord Templemore, in moving the second reading, said the object of the Bill was to enable the trustees of the Museum to accept a certain bequest made to them by the late Lord Rothschild. Lord Rothschild was for many years a keen collector of zoological specimens. Fifty years ago his collections were housed in a cottage at Tring, Hertfordshire. At the time of his death his collection had grown and become one of the greatest interest and value, including many rarities and unrivalled collections in some branches of zoology.

By a codicil to his will Lord Rothschild left his zoological museum to the trustees of the British Museum, together with all the collections and objects which it contained. The trustees were naturally anxious to accept this munificent bequest, but before they could do so they required the authority of Parliament. Statutory authority was necessary because the bequest was subject to the condition that the legacy should be accepted as an annexe to the British Museum and the Tring Museum used in a modified form for zoological research. Statutory authority was required to enable the trustees to keep the new bequest at Tring. The expense of running the museum at Tring would be about £5,000 a year.

In addition, £2,500 would be required in the first year or two for expenditure on the buildings, and at the outset there would be a non-recurring charge of about £6,000 to recoup Lord Rothschild's executors for the expenditure which they had incurred in respect of this museum since the testator's death. The close co-operation which would be possible between the Tring Museum and South Kensington would be of great value to the study of systematic zoology.

The Archbishop of Canterbury, as principal trustee and chairman of the Standing Committee of the British Museum, said it was right that the Bill should be introduced by a representative of the Government because it dealt with a matter of national importance. Probably no private collection comparable to this had ever been given to the nation. It represented the life work of Lord Rothschild to which he devoted his immense knowledge and his energy in the pursuit of science in every part of the world. The value of the collection in terms of money was hard to assess. He had seen it put at £500,000. Its real value, however, was its immense scientific importance. The scientific resources of the nation would be immensely increased by the acceptance of this bequest. For the purposes of research it was even more necessary that there should be a free and unfettered exchange of objects between South Kensington and Tring. All the difficulties involved in this matter had been overcome.

He would like to express the gratitude not only of the trustees but of the nation, to Lord Rothschild's sister; the present Lord Rothschild, who carried on his uncle's interest in zoological matters; and the eminent zoologist in charge of the museum under Lord Rothschild, who must needs look with some regret on his own child passing into other hands. He (the Archbishop of Canterbury) hoped that they would prove worthy of the trust, and he commended the Bill to the House as marking an event in the scientific history of this country which was of real importance.

Lord Snell expressed his party's appreciation of this munificent and scientifically important bequest. He said that we were accustomed to associating public benefactions with the name of the Rothschild family and he felt sure the nation would very gratefully accept this extraordinarily useful gift and wish in every way to honour the conditions attaching to it.

The Earl of Crawford said that with this bequest the entomological collections belonging to this country became the most important in the world. They were now subdivided between London and the country residence of the late Lord Rothschild. It was not only in entomology that the Tring Museum was so rich; there were great classes of mammals and birds and there was also a magnificent library.

Economic entomology was now one of the most important aspects of scientific research, and every year that passed gave it a greater economic and social importance. He happened to see the late Lord Rothschild a very few days before he died, when Lord Rothschild told him (the Earl of Crawford) that his great object in making this bequest was that scientific research and experiment should be developed to the greatest degree. That was impossible, owing to climatic and other reasons, in London. The fact that this residence was in a fine climate gave us one of the greatest opportunities any country had ever had of developing this most fruitful form of research. He would echo the gratitude which the nation should feel, as expressed by the most reverend Primate, to the late Lord Rothschild and his family.

The following are among the questions and answers recorded in the House of Commons recently:—

CHEMICAL RESEARCH (NEW COMPOUNDS)

Mr. DAVID ADAMS asked the Chancellor of the Duchy of Lancaster, as representing the Lord President of the Council, whether he is aware that the firm of May and Baker, Limited, are obliged to refuse requests for supplies of newly-discovered chemical compounds, because of the dangers involved, until further research has been carried out; and what steps he is taking to expedite the necessary research in this and similar cases?

The CHANCELLOR OF THE DUCHY OF LANCASTER (Earl Winterton): It is the ordinary and necessary practice in the case of new drugs that they should in the first place be subjected by specialists to carefully controlled trials, as regards their value and safety, in order to ascertain whether the medical results warrant production on a large scale for general distribution. The hon. Member may have particularly in mind a new compound which is being tried in the treatment of pneumonia, and about which the firm named recently published a statement that the work was still in an experimental stage. The manufacturers have not so far thought it necessary to seek the aid of the Medical Research Council in this case, but it is understood that the requisite investigations are in active progress.

Mr. ADAMS: Does the Minister not agree that in this very vital matter the Government ought to take a supervisory interest and, if necessary, give monetary or other assistance in the matter?

Earl WINTERTON: No. Sir.

. . . . . .

EXPERIMENTAL SLAUGHTERHOUSES

Mr. T. WILLIAMS asked the Minister of Agriculture how many applications were received from local authorities, persons or companies to erect experimental slaughtehouses under the terms of the Livestock Industry Act, 1937; the number of applications that have been withdrawn and the number still under active consideration; and what progress has been made in connection with the schemes?

Mr. W. S. MORRISON I would refer the hon. Member to the reply given to the hon. Member for Barnstaple (Mr. Acland) on June 14th, indicating that the procedure adopted by the Livestock Commission has been to consult informally with local authorities and other bodies regarding the submission of proposals for slaughterhouse schemes. I understand that the Commission have been in consultation with 25 local authorities and other bodies. Five local authorities have now intimated that they do not intend to proceed further with the matter, while three others have submitted definite and detailed proposals. The Commission are not aware how many other submissions may yet be made, but I am informed that memoranda for the guidance of local authorities and other bodies will be published by the Commission in the course of this week with a view to facilitating the preparation of proposals and expediting the submission of detailed arrangements.

Mr. WILLIAMS: Can the right hon. Gentleman give us any idea of how long it will be before the scheme for the first experimental slaughterhouse is approved?

Mr. MORRISON: I am afraid I could not give any estimate of time that would be of any value. It is obviously very difficult from the point of view of the local authorities and the interests concerned in the matter.

Mr. WILLIAMS: In view of the length of time that has elapsed already, may we take it from the Minister that, if the Livestock Commission should decide that none of these schemes can be accepted and applied, the Government themselves will undertake the job?

Mr. MORRISON: That is a hypothetical question in the present state of affairs. According to my information, there was trouble in the early days owing to the fact that some of the proposals were not sufficiently detailed to enable the Commission to form an opinion on them. They are now taking steps to issue information as to what particulars are required to be submitted with the application, and I am told that some of these proposals are sufficiently detailed for consideration to be given to them.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

July 11th.—N.V.M.A. committee meetings at the Royal (Dick) Veterinary College, Edinburgh: Organising, 2 p.m.; Appointments, 4.30 p.m.

July 12th.—N.V.M.A. Council meeting at the Royal (Dick) Veterinary College, Edinburgh, 2.30 p.m.; also meetings of the following committees: Parliamentary, 10 a.m.; Veterinary Officers and Public Health, 11 a.m.; Provisional, 2 p.m.

July 15th.—Meeting of the Society of Veterinary Practitioners, at Birmingham, 2.30 p.m.

July 15th.—Meeting of the Mid-West Division, N.V.M.A., at the Royal Veterinary College, Camden Town, 3 p.m.

July 18th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

July 22nd.—Annual General Meeting of the Sussex Division, N.V.M.A., at Brighton, 2.45 p.m.

July 27th.—Meeting of the Society of Veterinary Practitioners, at 36, Gordon Square, W.C.1, 2.30 p.m.

July 29th.—Summer Meeting of the Royal Counties Division, N.V.M.A., at the Zoological Gardens, Regent's Park, N.W.1, 2.30 p.m.

Aug. 21st-25th.—Thirteenth International Veterinary Congress, Zürich.

Aug. 26th-27th.—Thirteenth International Veterinary Congress, Interlaken.

Sept. 5th-9th.—Annual Congress, N.V.M.A., at Glasgow.

THE NEW PRESIDENT OF THE R.C.V.S.

Having served the Council of the Royal College of Veterinary Surgeons conspicuously well and with unsurpassed diligence, for a period of 16 years, Mr. Geoffrey Herbert Livesey, at the meeting held on June 24th, was enthusiastically elected the titular head of the profession. As we shall have the pleasure, in an early issue, of dealing with the new President's career, we content ourselves this week with making the above announcement and extending to him, on behalf of all his fellow members, our warmest congratulations on the attainment of this high honour. Mr. Livesey's capabilities and his excellent record of work in connection not only with the Royal College but with the N.V.M.A. and this journal, of which he was for a time Editor, are well known to our readers, who unanimously will join us in wishing him a year of happiness in office.

* * * * *

N.V.M.A. CONGRESS

We trust that members have made prompt response to the appeal, published in these columns last week, that they should forthwith reserve the accommodation they will require at Glasgow in September: we understand that hotels, etc., are being inundated with such requests from intending visitors to the Empire Exhibition.

Those members who have not yet applied, or who may even now have been unsuccessful in their applications, may be glad to learn that 40 places (a few single rooms and the remainder double) are available at the Maclay Hall, 17, Park Terrace, Glasgow, C.3. The warden of this hall of residence writes, however, that if some Members are prepared to share in rooms large enough for three occupants an additional ten places will be provided. The charges for those sharing treble rooms would be reduced to 6s. or 7s. bed and breakfast. As the quarters mentioned cannot be kept available unless definitely reserved (there being many other enquiries for accommodation) application should be made at once **to the Hon. Local Secretary.**

* * * * *

INTERNATIONAL VETERINARY CONGRESS

Reception of American Party in London

The N.V.M.A. proposes to entertain the members of the American Veterinary Medical Association Congress tour party at the London Casino, W.1, on the evening of July 22nd.

Members of the Association wishing to take part in the function may obtain tickets from the General Secretary, N.V.M.A., at the price of 21s. single, and 35s. double (these prices include admission, dinner and gratuities).

The President of the Association trusts that members of the N.V.M.A. and their ladies will support him in making this reception as pleasant and memorable an occasion for our American colleagues as possible.

OBITUARY

Dr. H. CARRÉ,

HONORARY DIRECTOR OF THE LABORATOIRE NATIONAL DE RECHERCHES, ALFORT

It is with profound regret that we have to report the death of Dr. H. Carré on June 5th, 1938. The veterinary profession in France, and indeed throughout the world, has suffered a grievous loss by the demise of this eminent scientist.

Born in 1870, Carré as a young man entered the veterinary school at Alfort. After qualification he passed a short period at the Pasteur Institute where he completed his bacteriological training. He was soon called upon by Nocard and accepted an invitation to work at Alfort on the problems of foot-and-mouth disease. Thenceforth, his progress was unbroken and, with the exception of the period of the War, he was ceaselessly engaged in research into a variety of subjects.

To the members of the profession in this country Carré will always be remembered mainly for his classical investigation into dog distemper. Some months before his death it was decided by one of the principal scientific bodies in France to call the "maladie du jeunage" by the designation of "maladie de Carré." It is particularly pleasing that his magnificent work will be perpetuated by this association of his name with dog distemper. In conducting his experiments in 1905 Carré must have been considerably handicapped since he had no facilities for the breeding of clean experimental dogs. It is all the more remarkable, therefore, that he was able to obtain such a faithful picture of the experimental virus infection. The greatest tribute to his scientific ability is to be found in the later investigations of Laidlaw and Dunkin which, while they extended his findings in many directions, amply confirmed the fundamental truths of his original observations.

A little later we find him engaged in research into bovine mastitis, swine fever, and other diseases due to filterable viruses, but his main attention was soon directed towards diseases of sheep of which he made a profound study. From 1906 to the end of his life he was ceaselessly probing the diseases due to infection with the Preisz-Nocard bacillus and allied organisms, contagious agalactia and the associated pyogenic infection "mal de lure," enzootic paraplegia, infections with *Erysipelothrix rhusiopathiae* and so on. In this field he gained recognition as a leading authority and his advice was sought from all parts of the world.

The name of Carré must ever be associated with that of his illustrious confrere Vallée and it is impossible to envisage a more harmonious

union than that which existed between these two disciples of Nocard. Their collaboration was responsible for a series of remarkable contributions, firstly on infectious anaemia of the horse (1904-1907) and later on foot-and-mouth disease. To them is due the credit for the recognition of immunologically distinct strains of foot-and-mouth disease virus, and for the elaboration of many methods of preventive and curative inoculation.

Carré was possessed of a most unassuming but charming personality. In spite of his multitudinous labours he was always ready to discuss his studies openly and at length with every visitor, both young and old. Possessed of endless patience, he was indefatigable in the pursuit of science, even towards the end of his life when he suffered severely from ill-health. Many of his labours were mainly of laboratory interest and were undertaken in order to satisfy his inquiring mind; nevertheless he never lost sight of the necessity for the practical application of the fruits of scientific endeavour and was always in close touch with disease in the field. There can be no doubt that it was this catholic outlook which accounts for the outstanding value of his contributions to veterinary science.

Of late years he was closely associated with Dr. P. Rinjard, the present Director of the Laboratoire national de Recherches. The following extract taken from a moving tribute which the latter has paid to the memory of Carré in the current number of the *Recueil de Médicine Vétérinaire* gives a shrewd insight into his character: "When it was suggested that I should share his laboratory with him he gave me a cordial welcome and constantly assisted me with his customary good nature. I felt immediately that he was giving me his confidence and the friendship thus formed remained undiminished throughout the 25 years of our collaboration. I owe much of my knowledge to him and I hold him in sincere admiration. I can testify that the whole of the staff of the Laboratoire national de Recherches will cherish the memory of one whom they regarded as the 'Patron,' who possessed in full measure the idealistic outlook."

In this country his name is held in high esteem. We extend our deep sympathy to the veterinary profession in France in its irreparable loss.

* * * * *

PERSONAL

Marriage.—Cameron—King. At St. John's Church, Bassenthwaite, on July 2nd, 1938, John Cameron, B.Sc., M.R.C.V.S., D.V.S.M., second son of the late Angus Cameron and of Mrs. Cameron, Speanbridge, Inverness-shire, to Mary Power, daughter of the late William Power King, Park House, Cockermouth, and of Mrs. King, Norham, Cockermouth.

Retirement of Mr. James Kenyon, M.R.C.V.S.—On June 18th, Mr. James Kenyon, M.R.C.V.S., retired on superannuation after 38 years' service with the Burnley Corporation. He is succeeded by Mr. J. K. Shaw, M.R.C.V.S., Veterinary Examiner, Department of Agriculture, Dublin.

* * * * *

UNIVERSITY OF EDINBURGH DEGREES IN VETERINARY SCIENCE

At the recent Graduation Ceremony of the University of Edinburgh, the following former students of the Royal (Dick) Veterinary College were honoured.

D.Sc. in Veterinary Science.

Ian Alfred Galloway. Thesis, "Studies on Certain Viruses Pathogenic for Man and Animals."

B.Sc. in Veterinary Science.

William McGregor Brownlie.
Samuel Geoffrey Wilson.

* * * * *

LIVERPOOL DEGREE EXAMINATIONS

The following are the University of Liverpool School of Veterinary Science, Examination Lists for June, 1938, in connection with the University Degrees of D.V.Sc., M.V.Sc., and B.V.Sc.:—

Degree of D.V.Sc.—Davies, G. O.

Degree of M.V.Sc.—Shuttleworth, A. C.

Degree of B.V.Sc.

First Examination. Part I (Chemistry).—Bolton, J. F., *Boundy, T., *Dugdill, R. S., *Garrett, D. M. G., Griffiths, R. B., Hargreaves, P. R., *Hunnam, R., *Jackson, F., Jenkins, J. B., *Jones, E. B., *Jones, J., *Jones, W. M., *Jubb, Sylvia C., Kerr, P. A., McCreanor, Mary, *MacLennan, I. S., Ohri, H. D., Perry, P. F., *Richards, R. A., Roberts, H., *Saunders, W. O. E., *Smith, B., Thomas, E. V., *Unsworth, K., *Walker, J., *Williams, A. L., Wilson, Margaret E. M., Wynne, M. *Part II (Physics).*—Bolton, J. F., Boundy, T., Dugdill, R. S., Garratt, D. M. G., Griffiths, R. B., Hargreaves, P. R., Hunnam, R., Jackson, F., Jenkins, J. B., Jones, E. B., Jones, J., Jones, W. M., Jubb, Sylvia C., Kerr, P. A., MacLennan, I. S., Ohri, H. D., Richards, R. A., Roberts, H., Smith, B., Unsworth, K., Walker, J., Williams, A. L., Wilson, Margaret E. M., Wynne, M. *Part III (Biology).*—Bolton, J. F., Boundy, T., Carlyle, A., Dugdill, R. S., Griffiths, R. B., Hague, D. C., Hargreaves, P. R., Hartley, W. T., Hunnam, R., Jackson, F., Jenkins, J. B., Jones, E. B., Jones, J., Jones, W. M., Jubb, Sylvia C., Kerr, P. A., McCreanor, Mary, MacLennan, I. S., Ohri, H. D., Richards, R. A., Roberts, H., Saunders, W. O. E., Smith, B., Unsworth, K., Williams, A. L., Wilson, Margaret E. M., Wynne, M.

*Passed with Distinction.

Third Examination. *Part I.*—John, H. M., Shaw, G. D. *Part II.*—Clarke, R., Dye, R. W., Edwards, C. M., Lewis, P. D., *Scott, Mary F., Shaw, G. D. *Part III.*—Dye, R. W., Edwards, C. M., John, H. M., Lewis, P. D.

*Passed with Distinction.

Fourth Examination.—*Arthur, G. H., Carr, W. H., *Dalby, Mary, Firth, T. B., *Hanbury, D. G., McCay, Joan R., *Smallwood, Ethel, Sutton, D. O., Willis, G. A.

*Distinction in Veterinary Parasitology and Entomology.

ROYAL (DICK) VETERINARY COLLEGE

Annual Distribution of Prizes

At the annual distribution of prizes at the Royal (Dick) Veterinary College, Edinburgh, on June 27th, the Earl of Rosebery, who presented the awards, made the gratifying announcement that the Totalisator Board had given a grant of £1,000 towards the fund for the extension of the College buildings. That really meant £2,000, his Lordship explained, as the Government gave a grant of £1 per £1 for contributions to the extension fund.

Lord Rosebery also made reference to the great progress made by the veterinary profession in recent years. He was President of the Thoroughbred Breeders' Association, and came in close contact on committees with several members of the veterinary profession. They were doing an enormous amount to ameliorate the condition of animals in this country, and to help very largely the owners of those animals. His Lordship mentioned that he was a breeder of thoroughbreds, and also of Aberdeen-Angus cattle. In his Aberdeen-Angus herd of 50 cows he had this year 51 healthy calves, whereas of the thoroughbred mares all over the country they had only 33 per cent. of foals. He was hoping that one of these days their scientific knowledge would enable the thoroughbred mare to be as prolific as the Aberdeen-Angus cow.

Referring to the establishment by the Ministry of Agriculture of a new animal health division. Lord Rosebery said he was sure it was going to be a great success, but he hoped the increase of State workers would not mean a reduction in the number of private veterinary practitioners. He had no doubt the Ministry of Agriculture would do what they could to employ private practitioners or at any rate not to harm them. He wished the students the best of luck in their profession.

An Irreparable Loss

Sir Thomas Hudson Beare, Chairman of the Board of Governors, who presided at the ceremony, said it was usual for the Chairman to give a short review of the work done in the College during the session. Usually it was a very pleasant task, as it had generally been a record of steady growth and development in the teaching and research work of the College. This year, unfortunately, he had as a contrast to record a year in which trouble and sorrow had been the lot of the College. Last November the College suffered what he might, without exaggeration, say was an irreparable loss in the death of Dr. Bradley. Dr. Bradley had been a member of the teaching staff since 1892—a period of 45 years—and had as Principal guided the destinies of the College for over a quarter of a century. It would be remembered they celebrated his semi-jubilee two years ago.

Referring to Dr. Bradley's work in connection with the College, the Chairman said his whole heart and soul were in the College—in fact, all the activities of the Royal (Dick) centred round the Principal. He was their inspiration. Though austere in manner, he had an exceptionally kind heart, and no student who really deserved help ever went for advice and assistance in vain.

He was a most excellent administrator, and it was to his skill as an administrator and to his vision and foresight that they owed that fine building in which they met, though even Bradley failed to foresee the great growth in the number of students which had occurred during the last ten years, and had compelled the Governors to embark on a scheme for enlarging the buildings.

Bradley was not only beloved by the students, but he secured the whole-hearted support of all his teaching colleagues, and he strove always to keep together those two fundamentals of higher education—teaching and research. Well, he had gone from them, and all he could say was that his memory would remain green for many, many years, as one of the most distinguished teachers of veterinary science this country had ever produced.

Naturally the year had been one of anxiety to the Board of Governors, as the death of Dr. Bradley not only removed their Principal but also their Professor of Anatomy. As it was quite impossible to fill either of these posts at once, he was glad to say that Professor Linton, at the request of the Board of Governors, undertook to act as Principal during the remainder of the session, and he wished personally to thank him on behalf of the Governors for the able manner in which he had carried out the unexpected duties thrust upon him, in addition to carrying on the work of his own department. He had also to thank Mr. Graham, Lecturer on Histology, who had acted as Professor of Anatomy and had kept that department in full activity in spite of its depleted staff.

Principal to be Freed from Teaching

The question of the appointment of a new Principal was still under consideration. He could not say much about that, but he could tell them that the Governors were convinced that Dr. Bradley's final illness was largely due to overstrain and overwork. The task of a Principal of that College was no easy one, and if they added to that the duties of being head of one of the most important teaching departments in the College they could realise what a heavy burden it was. The Governors had decided that it should be their policy to arrange for the new Principal to be entirely freed from teaching work, and he was glad to say that the Board had obtained the approval of the Department of Agriculture for Scotland and the Treasury for that policy. He hoped within a week or so an announcement would be made as to the new Principal and the new Professor of Anatomy. The Chairman concluded by expressing the gratitude of the Board to the members of the staff for their whole-hearted support during the last eight months.

The Prizewinners

The list of prizewinners is as follows:—

	Silver Medal	Bronze Medal
Chemistry	J. Lang.	W. H. Parker.
Practical Chemistry	—	D. W. Macdonald.
Biology	A. C. Gillespie.	J. Forster.
R. Stewart MacDougall Prize—A. C. Gillespie.		
Junior Anatomy	J. Cruickshanks.	E. Dixon.
Practical Junior Anatomy	E. Dixon.	—
Physiology	J. A. Laing.	I. M. Brown.
Practical Physiology	—	I. H. Pattison.
Histology and Embryology	I. E. Pease.	G. Ord.
Animal Management	J. A. Laing.	R. G. Halcrow.
The Gemmell Prize—E. Dixon.		
Senior Anatomy	J. Millar.	E. A. M'Pherson.
Practical Senior Anatomy	E. A. M'Pherson.	—
Pharmacology	A. M'Diarmid.	E. A. M'Pherson.
Hygiene	J. Millar.	J. M. Cameron.
Craig Robinson Medal	V. D. C. Farrant.	—
Pathology	J. H. Wilkins.	J. Keppie.
Parasitology	H. W. C. Newlands.	J. H. Wilkins.
Medicine	W. Clark.	D. Luke.
Surgery	W. Clark.	D. Luke.
Obstetrics	W. Clark.	J. J. Low.
Clinique	A. T. Cowie.	W. Clark.
Macfarlane (Aggregate) Medal	W. Clark.	—

BUREAU OF ANIMAL POPULATION

"The modest report of the Bureau for 1936-37, contains much of practical as well as of scientific interest," states *Nature*, "and this is vouched for by the contributions made towards its upkeep by the Medical Research Council, the Forestry Commission, the Agricultural Research Council, Imperial Chemical Industries, Ltd., the Partridge Research Fund, and Hudson's Bay Company, Ltd. At the same time these varied patronages suggest something of the extent of interests served by Mr. Elton and his colleagues. The research on vole populations in itself touches upon many interests: fluctuations in numbers of voles are of immediate concern to the farmer and forester, and to the ecologist they present problems still awaiting solution; the discovery of a disease closely resembling tuberculosis in a large proportion (22 per cent.) of voles trapped in areas ranging from the north-east of Scotland to Buckinghamshire, may give a clue to the high death-rate which closes a vole plague, and may have some relationship with human and bovine tuberculosis. These and other vole matters are engaging the attention of a strong team of scientific workers. Research on partridge fluctuations continues, and from 1938 for a period of three years at least, data are to be collected and a much-needed analysis is to be made on the periodical fluctuations of rabbits and hares in Great Britain. It says something for the desirability of scientific investigation and propaganda, that in the report from the Select Committee of the House of Lords on Agriculture (Damage by Rabbits), running to some 270,000 words, less than a hundred were devoted to research.

"Apart from its British inquiries, the Bureau has given its help to investigations in North America on fluctuations in numbers of the snow-shoe rabbits, an arctic wild-life inquiry, and on the evidence in the Hudson's Bay Company's archives of a ten-year cycle in fur-bearing animals. The only unsatisfactory feature of the report is concerned with finance. Although in this respect the position of the Bureau seems more assured than in former years, the fact that it is kept in being by grants drawn from 14 different sources, suggests that the collecting of moneys must occupy an undesirably large proportion of the time and energy of the scientific worker responsible for its organisation, and that the staff must be labouring under some uncertainty as to their future. Neither condition is conducive to the best scientific work, and we look forward to a day when the Bureau will become an integral part of a State-organised biological survey."

In view of the great importance of the work conducted by this Bureau in all its possible bearings on veterinary science, the suggestion made that the Bureau be freed from financial anxiety has our hearty support.

* * * * *

British Friesian cattle, what they have achieved in England, their longevity and constitution, their adaptability and their excellence in production are described in a booklet just issued by the British Friesian Cattle Society. It is claimed that no breed has shown greater prograss or been more improved. Copies may be obtained from the offices of the Society, Aldwych House, Aldwych, London, W.C.2.

HUMAN TUBERCULOSIS OF BOVINE ORIGIN

Recalling that last year attention was drawn in its columns to reports on human tuberculosis of bovine origin submitted to the *Office International d'Hygiène Publique*,* the *British Medical Journal* (April 23rd, p. 904) continues: "Several further notes have now been published.† In the U.S.A. the disease is apparently being eradicated as the result of slaughter of all infected cattle and by pasteurization of milk. In 1917 tuberculin tests were carried out on 20,101 animals, and 3·2 per cent. reacted positively. In 1936, there were only 0·7 per cent. of positive reactors among 22,918,038 animals. About 40 per cent. of the population still consume crude milk. This applies particularly to rural districts and small towns, but in towns with a population of 500,000, of all the milk sold 98 per cent. is properly pasteurized. Human pulmonary tuberculosis due to the bovine bacillus is very rare in Italy. Only seven such cases were found among 552 consumptives in 1932 and 1933. Cattle suffering from tuberculous disease must be notified and isolated according to the Italian regulations, and the sheds in which they were kept must be disinfected. Only tuberculin-negative animals may be introducel into herds giving milk intended to be consumed in the crude state, and they must be re-tested every six months. Germany's regulations for the prevention of tuberculosis in young calves are stringent. Australia has no legislation specifically directed to this end, but the incidence of tuberculosis in cattle is low; only about 8 per cent. are infected and 'open' cases are rarely seen. The tuberculin test is, however, being increasingly used. In New Zealand, too, this problem is not so serious as in many other countries; about 20 per cent. of extrapulmonary infections in man are caused by the bovine type of bacillus. The report from Poland includes a plea for the setting up of a special commission to decide on the best method of examining market milk for tubercle bacilli, and to arrange for a complete comparative study of the methods of pasteurization practised in various countries. A valuable paper recently published on human tuberculosis of bovine origin is by A. S. Griffith,‡ who states that 'the latest findings in regard to this intractable problem should be made widely known, since they prove beyond doubt that bovine tuberculosis is a serious menace which must be fought with the utmost vigour.' The Royal Commission on tuberculosis, in its interim report in 1907 and in its final report four years later, urged the necessity for measures being taken to prevent the sale or consumption of infected milk. Yet this country still has a milk supply so infected that often 5 to 12 per cent. or more of samples of ordinary churn milk contain tubercle bacilli, and more than 40 per cent. of the milking cows in this country are tuberculous. Griffith describes his investigation of the incidence of the bovine bacillus in pulmonary tuberculosis and mentions the results of other workers. In 1922 only four cases of 'bovine' pulmonary tuberculosis had been recorded in this country, and none had been noted abroad. At present the total number discovered in Great Britain is 163. In Denmark, K. A. Jensen found bovine bacilli in the sputum or gastric contents of 5 per cent. of 1,774 cases of pulmonary tuberculosis; in Hol-

British Medical Journal*, 1937, **1, 980.
†*Bull. Off. int. Hyg. publ.*, 1937, **29**, 1649.
‡*Tubercle*, 1937, **18**, 529.

land, A. C. Ruys found them in 6·4 per cent. of 204 patients. B. Lange, in Germany, cultivated bovine bacilli from twelve patients, all 'cattle contacts,' in three of whom the human bacillus was also isolated."

* * * * *

THE RESTORATION OF HISTOLOGY TO ANATOMY DEPARTMENTS

It is well known that in Scotland histology has been taught in the veterinary curriculum by the teachers of anatomy, and there is a good deal to be said for the system. This receives support from the findings put forward in the following annotation published in a recent issue of the *Lancet*.

"We note with interest that the teaching of histology in the University of Leeds is to be transferred from the department of physiology to that of anatomy. The university has good precedent for this administrative change, for a similar one has already been effected in several of the leading medical schools in the country. Some schools still hold out against a rearrangement that certainly seems logical, on the grounds that the teaching of histology has long been associated in this country with that of physiology, and that transference of its control to another department might lead to undesirable changes in the type of histology taught. While all will agree that histology is of little importance if considered apart from questions of function, the same applies to the teaching of anatomy of any kind, gross or minute, to students of medicine. On the Continent and also in America the association of histology with anatomy has been the accepted rule. It cannot fairly be claimed that the subject of histology is in a more flourishing and vigorous state in England than it is in the United States or in Continental countries. The inclusion of histological teaching, and of such histological research as teachers find time for, in the departments of physiology in England is to some extent accidental. It arose from the fact that physiology was first separated off from anatomy and made the subject of a separate chair at University College, London, at a time when the last of the professors of anatomy and physiology, William Sharpey, was known chiefly for his work as histologist and physiologist. It was not unnatural, therefore, that at the time of the partition histology should drift into the physiological laboratory. It was welcomed there then because the teaching of histology required relatively simple apparatus and equipment, and provided something definite in the way of a practical course of instruction, comparable with that already provided on the anatomical side by the dissection of the cadaver. With the subsequent large growth and development of experimental physiology, including experimentation on the human volunteer, together with the vast expansion of physiological chemistry, the difficulty in filling up the hours devoted to practical work in physiology was removed. Nowadays many physiologists find that the teaching of histology in their departments robs them of time which could be better used in the performance of experiments of some kind or another. It is perhaps not without significance that University College was also among the first medical schools in Great Britain to restore the teaching of histology to its anatomical department, a change effected as long ago as 1923."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

THE MINISTRY'S PANELS, ETC.

To the Editor of the Veterinary Record

Sir,—One can sympathise all the more with the position of Panel B men when even Panel A men reflect adversely on their own position. Tom Foy, the Yorkshire comedian, when sending a letter to a friend used to state that "where there is no writing there's nowt to say"; similarly, "where there are no attested herds there's nowt to do." The financial position as indicated by Mr. H. P. Hogben also seems to be poor. I once knew a gentleman, long since dead, who at a meeting of the shareholders of a company stated that when he formed the company he had no idea that it had no capital—truly a very lamentable confession of futility. Without the necessary capital to finance the scheme for the eradication of tuberculosis, contagious abortion and mammitis, health measures will be very truncated in their application.

I see very little ground for optimism in the future. A well known experienced and clear sighted veterinary surgeon, writing to me recently, expressed himself thus: "I wonder sometimes in the present state of the nation's finances whether the service will develop on the lines laid down or not. It appears to me that within a very short time on account of the huge sums required for armaments and A.R.P. there will be a tightening up of the purse strings and the Chancellor of the Exchequer will be hard put to it to finance these huge schemes." I am inclined to agree with this view.

I notice in the *Veterinary Record* for May 14th, 1938, that the wisdom of the Scottish authorities was evident when the Secretary of State for Scotland held a conference with officers of the Ministry of Agriculture (London). There "the Ministry of Agriculture were of opinion that it would not be reasonably practicable for them to accept this transfer (*i.e.*, from the local authorities to the Ministry) *for at least a year* in view of the various adjustments involved in the present transfer of the Veterinary Service."

It seems to me that a fair and simple way of allocating work among members of our profession would be to survey the ground and estimate the number of cattle in the country and then assume that in the first instance there are sufficient efficient men, without picking and choosing, to carry out the work as *district* veterinary surgeons, confined for this work to their own districts and including every practising member of the veterinary profession and in districts where cattle are plentiful appointing a number of new men.

Yours sincerely,

Bolton. G. Mayall, M.R.C.V.S.

June 25th, 1938.

* * * * *

METHODS OF TUBERCULIN TESTING

To the Editor of the Veterinary Record

Sir,—A careful perusal of the letters from Mr. Coleman and Mr. Tutt in reply to mine only serves to convince me more firmly that a service

will be done to all concerned by encouraging the use of the single intradermal test, for which the site most suitable is the caudal fold. The first step towards this consummation will be to urge the official recognition of this test by the Government and other bodies, breed societies, etc.

Mr. Coleman, an acknowledged expert, agrees with me that the double intradermal test requires considerable practice and experience and he cites cases to show that difficult conditions occur and he has had to increase the care required to make the injection correctly. He also agrees that the measurements and the second dose of tuberculin will not be necessary "when everyone has taken the trouble to become efficient," by which time I gather that there will not be much left of the *double* intradermal test as at present carried out.

Mr. Tutt also agrees that measurements are superfluous and brings out the point that reactions will occur up to the hundredth hour, which of course prompts the reply that the normal time for observing reactions to the single intradermal test is the ninety-sixth hour.

The objection to the caudal fold site as being at the unhygienic end of a bovine is fair, but in practice it will be found to be more apparent than real, and this test does not require so much special study and care, and experience, to enable the performer to become proficient, as is suggested. In fact any intelligent man can quickly learn how to make the injection correctly and with the use of a good synthetic tuberculin reactions are usually pretty clear cut.

I do not doubt the accuracy of the double intradermal test in the hands of the expert, but I feel sure that the encouragement of the single intradermal test in the caudal fold, or elsewhere if desired, and the abolition of measurements as suggested by Mr. Tutt would do much to simplify testing and produce a greater degree of uniformity.

Yours faithfully,
G. S. Muir.

* * * * *

BOVINE MASTITIS

To the Editor of the Veterinary Record

Sir,—In view of the far reaching schemes, or dreams, of Whitehall may I draw the attention of the profession to a striking reference to only one of the diseases scheduled for *eradication* from the dairy herds of the nation, and which, in view of its importance, deserves to be quoted in full. It is drawn from the conclusions arrived at by the author of "Bovine Mastitis"—A survey of the literature to the end of 1935—by E. Munch-Petersen, M.Sc., B.A. This work is published by the Imperial Bureau of Animal Health, Weybridge, Surrey (1938). Price 10s. It is a book of 238 pages with a further 34 pages of Bibliography.

"*There appears to be no known means of prevention or cure that can be relied upon,* but it is desirable to qualify this statement by pointing out that the segregation of healthy from affected cattle offers *some* hope of successful *prophylaxis,* and that in skilled hands, and with carefully selected cases, much may be done to ameliorate the disease by various local treatments.

"It appears to the author that, in very general terms, the following are points on which adequate and reliable data are required:—

(1) The normal udder and its secretion, including studies of cell content and flora.

(2) The path or paths by which infection gains entrance to the udder.

(3) Predisposing factors which may (*a*) render the udder more susceptible to infection, and (*b*) influence the course of infection once it is established.

(4) Further studies of the causal organisms (*a*) bacteria, (*b*) as pathogens, and (*c*) as antigens.

(5) The further evaluation of the various mastitis tests or groups of tests in the light of data forthcoming from a detailed study of normal udders.

(6) Further large-scale and adequately controlled trials of preventive and curative measures.

"Finally, there is one fact that is abundantly clear. While there is no doubt that ordinary research institutes can do useful work on some aspects of the mastitis problem, they are unable to carry out the fundamental observations that are required on privately or institutionally owned herds in their vicinity. For such work as this each cow must be subjected to repeated, detailed udder examination from the time she first calves until she leaves the herd; milk samples must be taken with more care than the average farm dairy worker is capable of, and must be examined without the delays involved by transit to a distant laboratory; the herd must be newly established, and be founded by heifers coming to their first lactation, and must be handled for several seasons for the convenience of the research workers and the acquisition of knowledge relating to mastitis, rather than as a commercial concern; and the research workers must have laboratory facilities actually on the premises. While such a plan undoubtedly involves heavy expense it is the shortest cut to a sound knowledge of the disease. Its desirability at the earliest possible date is well shown by the vast amount of mastitis research work which has been undertaken during the past half-century, *and which has been abortive* because of lack of the fundamental knowledge which thus, and thus alone, can be obtained."

The italics are mine, but in my opinion the whole excerpt should be italicised.

Yours faithfully,
J. W. Hall Masheter.

Ruddle House,
Newnham-on-Severn.
July 1st, 1938.

* * * * *

ELDER PLANT POISONING

To the Editor of the Veterinary Record

Sir,—I have been looking up my available literature to see if I could find anything relating to the above subject. In "Lehrbuch der Pharmakologie für Tiarärzte" by George Müller, Doctor of Veterinary Medicine and Philosophy of the Dresden School, I found the following: "In *Sambucus nigra* growths glucosides occur which by decomposition produce prussic acid." *Sambucus nigra* is the common elder, so it seems very likely that Mr. F. C. Scott's cases of fatalities in cattle were due to elder plant poisoning.

Yours truly,
G. Mayall.

Some Great Pioneers in British Professional Veterinary Journalism

WM. PERCIVALL, 1792-1854.
Founded *The Veterinarian*, 1828, resumed chief editorship after Youatt's death.

WM. YOUATT, 1776-1847.
Joined Percivall almost at once in editing *The Veterinarian*, and was its chief editor till 1847 (the year of his death).

WILLIAM HUNTING, 1843-1913.
Founded *The Veterinary Record*, 1888.

JOHN GAMGEE, 1831-1894.
Founded *The Edinburgh Veterinary Review*, 1858 (edited it till it became defunct in 1865).

GEORGE FLEMING, 1833-1901.
Founded *The Veterinary Journal*, 1875, and edited it till 1894.